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NEW ATLANTIS

BY

FRANCIS BACON

LORD VERULAM, VISCOUNT ST. ALBANS

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EDITED, WITH INTRODUCTION AND NOTES, BY

ALFRED B. GOUGH, M.A., Ph.D.

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PREFACE

THE *New Atlantis* was first published in 1627, the year after Bacon's death, by William Rawley, D.D., who had acted as his amanuensis. It appeared in the same volume with another posthumous and much longer work of Bacon's, *Sylva Sylvarum: or a Naturall Historie. In Ten Centuries* . . . London, Printed for W. Lee . . . Anno 1627.

A Latin version of the *New Atlantis* was published by Rawley in 1638, in a volume entitled *Francisci Baconi* . . . *Operum Moralium et Civilium Tomus, qui continet* . . . *Novam Atlantidem. Ab ipso honoratissimo auctore, praeterquam in paucis, Latinitate donatus.* As Rawley expressly states in the Life that Bacon was the author of the translation, it is a valuable aid to the interpretation of the English text, and has accordingly been quoted in the present edition to elucidate difficulties.

The *New Atlantis* is contained in the third volume of the standard edition of Bacon's works by R. L. Ellis, J. Spedding, and D. D. Heath, with an introduction by Spedding on pp. 121–4.

The only separate edition which need be mentioned is that by Prof. G. C. Moore Smith in the Pitt Press Series, Cambridge, 1909. This edition, to which the present editor acknowledges his obligations, contains an introduction of twenty-five pages, a very full excursus on 'Bacon's grammar as exemplified in the *New Atlantis*', a few notes, and a glossary.

Among the best books on Bacon's life and work are Count Charles de Rémusat, *Bacon, sa vie, son temps, sa philosophie et son influence*, 1857; Dr. Edwin Abbott, *Francis Bacon*, 1885 (pp. 415–25 on the *New Atlantis*); and on a smaller scale Dean Church's volume on Bacon in the English Men of Letters series, 1884, and that in the English Philosophers series by Dr. Thos. Fowler, late President of Corpus, 1881. The student may also profitably consult the articles on Bacon in the *Dictionary of National Biography* (life by S. R. Gardiner, philosophy by T. Fowler), and in the *Encyclopaedia Britannica*, 11th edition, by the late Prof. Robert Adamson and Mr. Malcolm Mitchell; also the *Cambridge History of English Literature*, vol. IV, ch. xiv, by Prof. Sorley. Macaulay's famous essay is stimulating, but one-sided. The chapter on Bacon in Sir Sidney Lee's *Great Englishmen of the Sixteenth Century*, is a more balanced estimate.

The present edition is a reprint of the first. A few sentences which offend modern taste have been omitted. Obvious errors have been corrected, and noted at the foot of the page, those already corrected by Prof. Moore Smith being marked *M.S.* Wrong founts, which are numerous in the first edition, have been silently rectified.

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INTRODUCTION

The philosophical and scientific reform which it was Bacon's life-work to advocate, had already taken possession of his mind at the outset of his career. At the age of about twenty-two he sketched an outline of his proposals in a pamphlet now lost, with the audacious title *Temporis Partus Maximus*, 'The Greatest Birth of Time'. Some nine years later, in 1592, he wrote a remarkable letter to his uncle Burghley, Queen Elizabeth's chief minister, setting forth frankly his aims, and asking for some remunerative office, that would enable him to prosecute his vast plans with the help of paid assistants. With the self-confidence of genius, the barrister of thirty-one urges his claims in these significant words: 'I confess that I have as vast contemplative ends, as I have moderate civil ends: for I have taken all knowledge to be my province; and if I could purge it of two sorts of rovers, whereof the one with frivolous disputations, confutations, and verbosities, the other with blind experiments and auricular traditions and impostures, hath committed so many spoils, I hope I should bring in industrious observations, grounded conclusions, and profitable inventions and discoveries; the best state of that province. This, whether it be curiosity or vain glory, or nature, or (if one take it favourably), *philanthropia*, is so fixed in my mind that it cannot be removed . . . If your Lordship will not carry me on, I will not do as Anaxagoras did, who reduced himself with contemplation unto voluntary poverty, but this I will do—I will sell the inheritance I have, and purchase some lease of quick revenue, or some office of gain that shall be executed by deputy, and so give over all care of service, and become some sorry book-maker, or a true pioneer in that mine of truth, which (he said) lay so deep.' Here Bacon already reveals the motives which prompted the philosophical labours of his life. He had found the realm of knowledge a prey to marauders—the schoolmen with their barren speculations, and the charlatans, alchemists, astrologers, quacks and the like, with their empirical groping, and irrational traditions. Already in his youth he had seen the vision of humanity purged from error, from superstition, dogmatism, and false views of the world, delivered from the helplessness and suffering that ignorance brings, gifted with unimagined power over Nature; he heralded, in his own words, the coming of the Kingdom of Man. He heard already, as he was to hear to the end of his life, the imperative call to the task of clearing away the obstructions, and pointing the way to that kingdom. Whether the dominant motive was 'philanthropy', or 'curiosity' and 'nature', i. e. an irresistible impulse to know, is an idle question that might have puzzled Bacon himself; 'vain glory' it certainly was not, but it was the noblest trait in a character in which lofty and base aims were strangely mingled.

In the year in which Bacon wrote this letter, he composed for a Court entertainment a semi-dramatic 'device' or interlude called *The Conference of Pleasure.* In a part of this, dealing with 'The Praise of Knowledge', he anticipates the power 'to endow the life of man with infinite commodities'. He enumerates the causes of the prevalent ignorance and error; he recalls the wonderful changes already wrought by printing, artillery, and the mariner's compass, inventions 'but stumbled upon and lighted on by chance. Therefore, no doubt', he adds, 'the sovereignty of man lieth hid in knowledge; wherein many things are reserved which kings with their treasures cannot buy, nor with their force command; their spies and intelligencers can give no news of them; their seamen and discoverers cannot sail where they grow. Now we govern nature in opinions, but we are thrall to her in necessities; but if we would be led by her [in ?] invention, we should command her in action'.

A second device, *Gesta Grayorum*, which formed part of the Christmas revels at Gray's Inn in 1594, contains an appeal to the mock sovereign 'the Prince of Purpoole', which remarkably anticipates the scheme of Solomon's House in the *New Atlantis*. 'I will commend to your Highness four principal works and monuments of yourself. First, the collecting of a most perfect and general library . . . Next, a spacious, wonderful garden, wherein whatsoever plants the sun of divers climates, out of the earth of divers moulds, either wild or by the culture of man, brought forth, may be . . . set and cherished; this garden to be built about with rooms to stable in all rare beasts and to cage in all rare birds; with two lakes adjoining, the one of fresh water, the other of salt, for like variety of fishes . . . The third, a goodly huge cabinet, wherein whatsoever the hand of man by exquisite art or engine hath made rare in stuff, form, or motion; whatsoever singularity, chance, and the shuffle of things hath produced; whatsoever nature hath wrought in things that want life and may be kept, shall be sorted and included. The fourth, such a still-house, so furnished with mills, instruments, furnaces, and vessels as may be a palace fit for a philosopher's stone . . . Miracles and wonders shall cease, by reason that you shall have discovered their natural causes.'

Although the following years were occupied with legal and political business, and with the absorbing effort to advance his interests at Court, Bacon never lost sight of the great work he had set before himself. In an interval of leisure after James's accession, he wrote down his aims in a Latin proem to an intended work on the interpretation of nature.[1] 'Believing', he writes, 'that I was born for the service of mankind, and regarding the care of the Commonwealth as a kind of common property which, like the air and water, belongs to everybody, I set myself to consider in what way mankind might be best served, and what service I was myself best fitted by nature to perform. Now among all the benefits that could be conferred upon mankind, I found none so great as the discovery of new arts, endowments, and commodities for the bettering of man's life . . . But if a man should succeed, not by striking out some particular invention, however useful, but in kindling a light in nature—a light that should in its very rising touch and illuminate all the border regions that confine upon the circle of our present knowledge; and so spreading further and further should presently disclose and bring into sight all that is most hidden and secret in the world—that man (I thought) would be the benefactor indeed of the human race—the propagator of man's empire over the universe, the champion of liberty, the conqueror and subduer of necessities.'

Bacon adds that he considers his own mind especially fitted for the search after truth; and although various circumstances have induced him to serve the state, he will now apply himself wholly to his intellectual task. His time is short: 'I hold it enough to have constructed the machine, though I may not succeed in setting it on work'.

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[1] *Philos. Works*, ed. Ellis, Spedding, and Heath, iii, p. 518. I follow the translation in this edition.

Though Bacon could not abide by his resolution to abandon public life, the next few years witnessed the writing of *The Advancement of Learning* (1605), the eloquent treatise in which he surveyed the existing state of the sciences, and showed how vast and promising a field lay open to the patient and untrammelled investigator, while in *Cogitata et Visa* (1607) he gave a preliminary exposition of his new method.

He was not content with explaining to the learned world the method which he believed would revolutionize science; he was eager to 'set the machine on work'. We find in some secret memoranda, the *Commentarius solutus*,[1] which he jotted down in the summer of 1608, that he proposed to superintend the compilation of a History of Marvels, i.e. of apparently abnormal phenomena, and a History of Mechanical Inventions. He adds 'Laying [scheming] for a place to command wits and pens. Westminster, Eton, Winchester, specially Trinity College in Cambridge, St. John's in Cambridge, Magdalen College in Oxford . . . Giving pensions to four for search to compile the two histories *ut supra*. Foundation of a college for inventors. Two galleries with statues for inventors past, and spaces or bases for inventors to come. And a library and an enginary. Qu. of the order and discipline, to be mixed with some points popular to invite many to contribute and join. Qu. of the rules and prescripts of their studies and enquiries. Allowance for travelling; allowance for experiments. Intelligence and correspondence with the universities abroad. Qu. of the manner and prescripts touching secrecy, tradition, and publication. Qu. of removes and expulsions in case within a time some invention worthy be not produced. And likewise qu. of the honours and rewards for inventions, vaults, furnaces, terraces for insolation; work houses of all sorts . . .' A comparison with the description of Solomon's House will show that it is foreshadowed in many particulars by these notes.

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[1] J. Spedding, *Life and Letters*, iv, 66.

Nothing tangible was to come of these schemes. Those in power were prejudiced by Bacon's enthusiasm for ideals which they could not or would not understand. He made few converts. But the most fatal obstacle to the realization of his dreams lay in his own double ambition. A true son of the Renascence, he was not content 'to take all knowledge to be his province', he must be a man of affairs as well, and bend his utmost energies to the task of climbing to the highest offices of state. This is not the place to describe his public career, or to discuss the measure of his meanness in the affair of the Earl of Essex, of his sycophancy to James I and the Duke of Buckingham, of the intrigues by which he mounted to the Chancellorship, or of the venality through which he fell. But we may note that his immersion in public business involved loss of that time which in his highest moods he felt he owed to science and humanity. He planned a vast system, and achieved only a fragment of it.

The *Novum Organum,* which Bacon published in 1620, is the most comprehensive and mature presentation of his system. Its aim can hardly be better expressed than in the words which he puts into the mouth of the Father of Solomon's House. 'The end of our foundation', he says (p. 35), 'is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible.' The *novum organum,* or 'new instrument', is contrasted with the old instrument for the attainment of knowledge, the syllogistic logic of Aristotle and his mediaeval disciples. This method, to which the universities, Bacon complains, are still devoted, is in his judgement practically barren; it has done nothing to increase man's command over nature, but exhausts the mind with empty disputations remote from reality. In the meantime the very conception of progress has been lost. Reform must begin by sweeping aside theories and preconceptions of all kinds. The mind must be on its guard against *idola* or phantoms—the various false notions which lead it astray. It must go straight to nature. An exhaustive collection of well ascertained physical facts must be made. (Cf. the Merchants of Light, Depredators, and Mystery-men of Solomon's House.) This collection must be augmented by a systematic series of experiments. (Cf. the Pioneers.) The treatment of the mass of material thus obtained is only intelligible in the light of Bacon's doctrine of 'forms'. We can only gain power over Nature and make her serve our purposes by discovering and imitating her modes of action. '*Parendo vincitur.*' Therefore to produce a desired effect, or as Bacon expresses it, 'to superinduce a nature', e.g. cold (*New Atlantis*, p. 36), longevity (p. 36 f.), generative power (p. 38 f.), toughness (p. 40), any desired colour (p. 42), or perfume (p. 43), it is not enough to proceed by the blind and stumbling empirical methods hitherto in vogue, but we must examine the instances we have collected to find the formal cause of that nature, or in Bacon's technical language, its 'form'. Viewed from another standpoint, the 'forms' are, as Bacon observes (*N. O.*, ii. 17), the laws which govern and constitute simple natures.

The process of induction is preceded by a careful classification of the facts. Tables of various kinds must be drawn up. (This is the work of the Compilers in Solomon's House.) In the search for the 'form' of a given nature (Bacon's example is heat) we first compile a table of instances which agree in possessing the nature, then one of instances otherwise similar from which it is absent, thirdly a table of instances in which the nature is present in varying degrees (what J. S. Mill calls the method of concomitant variations). By a process of elimination we can then narrow the field until we are in a position to form a rough provisional theory or working hypothesis, which, although far from complete, will not only guide us in our search for the ultimate explanation, but will already provide us with certain rules which can be applied practically in the arts. This stage Bacon picturesquely calls 'the first vintage'.[1] (Cf. the Dowry-men or Benefactors.) The hypothesis must next be rigorously tested by a further examination of the instances, especially of those which seem to be exceptional or contradictory, and by 'new experiments of a higher light' (*New Atlantis*, p. 45. Cf. the Lamps and Inoculators). We thus proceed from axioms which are only probable to those which are certain, until we have discovered the form. (Cf. the Interpreters of Nature.) Finally, in the light of these grand generalizations we can apply our knowledge deductively to human needs. We can superinduce natures where we require them. Man will enjoy dominion over nature, and will enter into his kingdom. Such in barest outline is the great key to knowledge which fired Bacon's imagination with an almost illimitable hope.

Posterity has generally regarded Bacon as the pioneer of modern science. This is only partially true. Three centuries earlier his great namesake Roger Bacon had anticipated many of his principal ideas. So at a later date had Leonardo da Vinci and others. Scholastic logic and science were already discredited in Bacon's day, though they were to linger long in the conservative seats of traditional learning. The great movement for the emancipation of science had already begun. Bacon was strangely ignorant of the epoch-making discoveries of such men as Kepler, Napier, and Harvey. He persistently opposed the heliocentric theory for which Copernicus had brought cogent proofs eighty years before. He slighted the brilliant and patient work of Gilbert on magnetism. He almost ignored the fundamental importance of mathematics in natural science. His doctrine of forms and natures rests upon an erroneous metaphysical basis. His inductive method of research differs widely from the procedure which has succeeded in wresting so many of her secrets from nature. It altogether underrates the variety and complexity of the physical universe. Science cannot wait for an exhaustive catalogue of phenomena before making her generalizations, nor has she any need to do so. Conscious of the mischief wrought by the wild and ill-grounded speculations of most of his predecessors and contemporaries, Bacon is unduly suspicious of hypothesis, though he cannot altogether dispense with it. The '*permissio intellectus*', the provisional theory, has its place at an advanced stage in the process. Here Bacon's psychology is at fault. His method is almost purely mechanical. It will, in his words (*N. O.* i. 61), almost reduce intellects to a level. It is not thus that great discoveries have been made. Bacon, although himself amply endowed with imagination, fails to recognize the vital part which that faculty plays in scientific research. A genius does not begin by tabulating a vast collection of facts, and sifting and resifting them, but by a flash of intuition he makes a wide generalization from a number of facts which are insufficient in themselves to prove it. He then collects as widely as possible such facts as have a bearing on the hypothesis, and thus he and his successors gradually put it to the test. An investigator deficient in scientific imagination, however patient and accurate and amply provided with facts, would be simply bewildered by the complexity of nature, and would never discover the underlying law. It is chiefly for this reason that Bacon's method, taken as a whole, has been unfruitful.

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[1] *N. O.* ii. 20.

It would, however, be false to deny Bacon the supreme honours of a pioneer. Though others of his time had a greater gift for scientific research, none was able to make so comprehensive a survey of the sciences as he, or to recognize like him the unity of the realm of nature. None was equally conscious of the issues at stake, or had so clear a vision of the conquests that the new spirit was to make. None urged so convincingly the dignity and the practical value to mankind of organized scientific effort. By proclaiming that mere tradition must be abandoned, that progress depends upon observation and experiment, that induction must proceed by selection and elimination, and end with deduction, that true knowledge is the knowledge of causes, and that such knowledge is power, he gave eloquent expression to the scattered and unformulated thoughts of many minds. His importance lay, not in drawing up a code of rules of procedure, but in stimulating thought. In his own words, he was the bell that called the other wits together. In the lofty imagery of Cowley's 'Ode to the Royal Society' Bacon was the Moses who led the chosen hosts to the borders of the Promised Land, which he viewed from the top of Pisgah, though he might not enter it.

The condemnation of Bacon for bribery and his dismissal from office took place within seven months of the appearance of the *Novum Organum*. The *New*

Atlantis was one of the numerous works which he wrote during the brief remainder of his life, and was left in manuscript when he died on April 9, 1626. The date of its composition can be determined within narrow limits.[1] William Rawley, D.D., Bacon's chaplain, amanuensis, and literary executor, writes in his Life of Bacon,[2] 'The last five years of his life, being withdrawn from civil affairs and from an active life, he employed wholly in contemplation and studies . . . In which time he composed the greatest part of his books and writings, both in English and Latin, which I will enumerate (as near as I can) in the just order wherein they were written.' In his Latin version of the Life, Rawley adds '*quam praesens observavi*'. Unfortunately where the order can be checked, it is not always quite correct.[3] Rawley apparently has partly grouped the

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[1] The date 1614–7 to which it is assigned by S. R. Gardiner in his life of Bacon in the *Dict. Nat. Biog.* (followed by E. Abbott, *Francis Bacon,* 1885, p. 416), is based on the repeated mention of it in a paper (Brit. Mus., Harl. Chart. 111 D 14), which Professor Moore Smith showed to be a forgery written many years after Bacon's death (*Athenæum,* Feb. 3, 1900). Dr. Gardiner at once withdrew the inference he had made regarding the date of *New Atlantis* (*Athenæum,* Feb. 10, 1900).

[2] From the edition of the Life in Bacon's Works, ed. Ellis, Spedding, and Heath, vol. i, pp. 8–10.

[3] The list is as follows :—

Hist. of the Reign of Henry VII	pub. March, 1622.
Abcedarium Naturae [lost].	
Historia Ventorum	pub. Nov. 1622.
Historia Vitae et Mortis	pub. Jan. 1623
Historia Densi et Rari.	
Historia Gravis et Levis.	
Discourse of a War with Spain.	Written Jan. or Feb. 1624 (Spedding).
Dialogue touching an Holy War	pub. 1622.
New Atlantis.	
Preface to a Digest of the Laws of England.	
Hist. of the Reign of Henry VIII [small fragment].	

titles according to their subjects. But the position of the *New Atlantis* in the list points most naturally to 1623 or 1624 as the year of its composition. Spedding inclined to the latter date, chiefly because Rawley says in his prefatory note that the desire of collecting materials for *Sylva Sylvarum* (which Bacon only completed shortly before his death) diverted him from his purpose of completing it.

Sylva Sylvarum is a collection of facts, or alleged facts, illustrating natural phenomena, somewhat uncritically and unmethodically gathered by Bacon in the course of his reading, and supplemented from his own observation, together with attempted explanations, and proposals for experiments of the most varied kinds. It was intended to provide material for inductive inquiry

De Augmentis Scientiarum [Latin version reads '*Interveneret opus de A.S.*] . . . . pub. Oct. 1623.
Essays, enriched and enlarged . . . . . pub. 1625.
Certain *Psalms* in English Verse . . . . . pub. Dec. 1624.
Latin Translation of *Henry VII*
" " " *Essays*
" " " *Holy War*
" " " *New Atlantis*
} 'for the benefit of other nations' ['*apud quos expeti audiverat*'].
Revision of *De Sapientia Veterum.*
Inquisitio de Magnete.
Topica Inquisitionis de Luce et Lumine.
Lastly, *Sylva Sylvarum*, or the Natural History.

The word *interveneret*, in the Latin version, seems to indicate that the *De Augmentis* is placed too late in the list. Spedding considers that it was written before the *Historia Ventorum*, although published a year later. If the words *apud quos expeti audiverat* apply to the *New Atlantis* at all, we can only suppose that Bacon or one of his friends had mentioned the work to some foreign correspondent or visitor. Nothing is proved by the fact that it is not mentioned in a list Bacon gives of the works he meditates and has in hand ('*quae meditor et molior*') in a letter to Father Fulgentius of Venice (*Letters and Life*, vii, 531), the date of which is uncertain, but supposed to be 1625. Bacon deliberately left the *New Atlantis* unfinished. See p. xxviii.

according to his method. Dr. Rawley observes in his prefatory note (p. 2), 'This work of the New Atlantis (as much as concerneth the English edition) his lordship designed for this place; in regard it hath so near affinity (in one part of it) with the preceding Natural History.' The connexion between the two treatises is closer than might be expected, for the scientific experiments and processes conducted in Solomon's House agree in many particulars with those described and proposed in *Sylva Sylvarum*, as is pointed out in the notes in the present edition.

In 1624 Bacon was sixty-three years of age, in feeble health, politically broken and disgraced, but ardent as ever in pursuit of the knowledge which he foresaw would deliver humanity from bondage and suffering, convinced that he held 'the thread of the labyrinth', sanguine in his hope that men would come forward to take up the work. Still he had for seventeen years laid his plans before the world, and there was little response. He determined, we may suppose, to try the effect of a new appeal, although a slight and popular one. 'Truth embodied in a tale' might stir the sluggish imagination of the public, and perhaps attract those who refused to study the serried arguments of the *Novum Organum*. He would give a simple object-lesson, he would picture the changes that might reasonably be expected from the realization of his scheme.

The narrative of the *New Atlantis* owes little to earlier authors. Its main feature, one might almost say its *raison d'être*, Solomon's House, is, as we have seen, the embodiment, even in details, of Bacon's lifelong dream. But a convenient setting for the tale was suggested by Plato's myth of Atlantis, contained in the *Timaeus* and the *Critias*. In the *Timaeus* Critias repeats to Socrates a narrative which an Egyptian priest had related to

Solon during the travels of that sage. 'There have been,' said the priest, 'and will be again, many destructions of mankind arising out of many causes; the greatest have been brought about by the agencies of fire and water, and other lesser ones by innumerable other causes. . . . When . . . the gods purge the earth with a deluge of water, the survivors in your country are herdsmen and shepherds who dwell on the mountains, but those who, like you, live in cities are carried away by the rivers into the sea. . . . After the usual interval, the stream from heaven, like a pestilence, comes pouring down, and leaves only those of you who are destitute of letters and education; and so you have to begin all over again like children, and know nothing of what happened in ancient times, either among us or among yourselves.' After relating that nine thousand years before his time Athens had been a most flourishing state, the priest continued, 'Histories tell of a mighty power which unprovoked made an expedition against the whole of Europe and Asia, and to which your city [Athens] put an end. This power came forth out of the Atlantic Ocean, for in those days the Atlantic was navigable; and there was an island situated in front of the straits which are by you called the pillars of Heracles; the island was larger than Libya and Asia put together, and was the way to other islands, and from these you might pass to the whole of the opposite continent which surrounded the true ocean. . . . Now in this island of Atlantis there was a great and wonderful empire which had rule over the whole island and several others, and over parts of the continent, and furthermore the men of Atlantis had subjected the parts of Libya within the columns of Heracles as far as Egypt, and of Europe as far as Tyrrhenia [Etruria]. This vast power, gathered into one, endeavoured to subdue at a blow our country and yours and the whole of the region within the straits; and then, Solon, your country shone forth. . . . She was . . . the leader of the Hellenes. And when the rest fell off from her . . . she defeated and triumphed over the invaders and preserved from slavery those who were not yet subjugated, and generously liberated all the rest of us who dwell within the pillars. But afterwards there occurred violent earthquakes and floods; and in a single day and night of misfortune all your warlike men in a body sank into the earth, and the island of Atlantis in like manner disappeared in the depths of the sea. For which reason the sea in those parts is impassable and impenetrable, because there is a shoal of mud in the way; and this was caused by the subsidence of the island.'[1]

The fragmentary dialogue called *Critias* (referred to as *Atlanticus* in Bacon's thirty-fifth Essay) contains a poetical description of the origin and splendid civilization of this fabled nation of Atlantis. It is there related that 'Poseidon [Neptune], receiving for his lot the island of Atlantis, begat children by a mortal woman, and settled them in a part of the island, which I will describe. Looking towards the sea, but in the centre of the whole island, there was a plain which is said to have been the fairest of all plains and very fertile. Near the plain again, and also in the centre of the island at a distance of about fifty stadia, there was a mountain not very high on any side. . . . Poseidon . . . inclosed the hill in which she [Cleito] dwelt all round, making alternate zones of sea and land larger and smaller, encircling one another; there were two of land and three of water, which he turned as with a lathe, each having its circumference equidistant every way from the centre, so that no man could get to the island, for ships and voyages were not as yet. He himself, being a god, found no difficulty in making special arrangements for the centre island, bringing up two springs of water from beneath the earth, one of warm water and the other of cold, and making every variety of food to spring up abundantly from the soil. . . . Now Atlas [the eldest of Poseidon's sons in the country] had a numerous and honourable family, and they retained the kingdom, the eldest son handing it on to his eldest for many generations; and they had such an amount of wealth as was never possessed by kings and potentates, and is not likely ever to be again, and they were furnished with everything which they needed, both in the city and country. For because of the greatness of their empire many things were brought to them from foreign countries, and the island itself provided most of what was required by them for the uses of life. . . . Meanwhile they went on constructing their temples and palaces and harbours and docks.'[1] These magnificent buildings are described at length.

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[1] Plato, *Timaeus*, 22–25, transl. Jowett, 3rd edition. Cf. *New Atlantis*, pp. 18–21.

Plato's conception of periodic catastrophes and vanished civilizations swayed Bacon's imagination, as may be seen from other passages in his writings, notably *Novum Organum*, i. 92, and *Essay* lviii, 'Of the Vicissitude of Things'. In that essay is a passage, quoted in the note to p. 19, l. 33 of the present work, which is closely parallel to part of the *New Atlantis*, and shows that what to the modern reader seems a bold and indeed absurd flight of the fancy regarding the origin of America and its native population, was to Bacon a perfectly serious theory. The discovery of America, and especially of the strange isolated civilizations of

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[1] Plato, *Critias*, 113 ff., transl. Jowett, 3rd edition. Cf. *New Atlantis*, pp. 18, 19.

Mexico and Peru had aroused much speculation, and Bacon's belief that America was the wreck of the submerged Atlantis was shared by many in his age.[1] The wonderful tales brought from newly-discovered lands both in East and West, aroused in various minds the fancy that somewhere there might yet be found an ideally happy and virtuous community.

The people of Atlantis had perished for their pride and godlessness; but beyond their land were certain islands, mentioned, as we have seen, by Plato in the *Timaeus*. Here Bacon fancies for the purpose of his fable, in the unexplored Pacific, may still flourish a nation disciplined by wise laws, which has preserved its moral integrity, and has escaped the fate which destroyed the arrogant Atlantaeans. Uncorrupted by the vices that have spread like a plague through the rest of the earth, intellectually unspoilt by the sterile and delusive modes of thought that other civilized peoples have derived from the Greeks, the nation of this New Atlantis pursues with unimagined success the search for truth, and uses its knowledge for the increase of human welfare, comfort, and power.

Although Bacon alludes in one place[2] to the *Utopia* of Sir Thomas More, there is hardly a trace of borrowing from the masterpiece of his great predecessor on the woolsack. The spirit and aims of the two works are as sharply contrasted as the characters of their authors. With More's austere simplicity, his sense of social injustice, and his revolutionary communism, Bacon has no sympathy. In the emphasis which Bacon lays upon natural science, ignored by More, for it scarcely existed in his day, he agrees with his contemporary, Tommaso Campanella, the author of the *Civitas Solis*.

[1] See note to p. 19, l. 4.

[2] In a passage omitted in this edition.

It is by no means improbable that Bacon had read that famous and eccentric sketch of an ideal commonwealth, shortly before composing his own narrative, and that he adopted a few hints from it. Possibly indeed it suggested the writing of the *New Atlantis*. Campanella, a Calabrian friar and philosopher (1568–1639), does not appear to be mentioned in any of the writings of Bacon, who was however considerably influenced by his master Telesio. All three philosophers desired to substitute the experimental method for the traditional Aristotelianism, which they vigorously attacked. *The City of the Sun* was first published at Frankfort in 1620,[1] some four years before Bacon's romance was written, as an appendix to Campanella's *Realis Philosophia epilogistica*, a system of natural science, ethics, politics, and economics. Like the *New Atlantis*, the fiction forms a kind of supplement to the philosophy of its author, an attempt to exhibit his theories in practice. Socially, this ideal state adopts the most daring communistic principles of Plato's *Republic*, but in assigning a position of great official dignity and authority to the representatives of science, it agrees with the *New Atlantis*. Under the supreme magistrate, who is entitled 'Metaphysic', and has to know all the sciences, the functions of government are divided between three princes, one of whom, 'Wisdom', superintends all the sciences and arts, both liberal and mechanical. For the teaching and practice of these, certain public buildings are set apart, forming a complex of laboratories, workshops, museums, and college. Statues and other memorials are dedicated to eminent inventors in the mechanical arts, in science, in warfare, and in law. 'They have but one book, which they call Wisdom, and in it all the sciences are written.' In an age when the promotion of scientific research was no concern of the state, and when a certain stigma of the illiberal and banausic still clung to mechanical inventors, the proposals of Campanella and Bacon to honour such men with public offices and statues were perhaps more startling than we can readily imagine.

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[1] A second edition, the earliest in the British Museum, appeared, also at Frankfort, in 1623, within a year or two of the writing of the *New Atlantis*.

These points of resemblance between the two books seem to be accidental, for Bacon had, as we have seen, many years before planned a great scientific institution, adorned with statues of inventors. Other coincidences are perhaps more striking, and suggest borrowing on Bacon's part. Thus we read in *The City of the Sun*, 'When I asked with astonishment whence they had obtained our history, they told me that among them there was a knowledge of all languages, and that by perseverance they continually send explorers and ambassadors over the whole earth, who learn thoroughly the customs, forces, rule, and histories of the nations, bad and good alike. These they apply to their own republic, and with this they are well pleased. I learnt that cannon and typography were invented by the Chinese before we knew of them'[1] (cf. *New Atlantis*, pp. 16 f., 24 f., 45). 'The people of the City of the Sun refuse to take money'[2] (cf. *N. A.*, pp. 7, 9, 12). 'They are unwilling that the state should be corrupted by the vicious customs of slaves and foreigners'[3] (cf. *N. A.* pp. 6, 22). 'To strangers they are kind and polite; they keep them for three days at the public expense . . . and there are men whose duty it is to take care of and guard the guests' (cf. pp. 7–11). 'But if strangers should wish to become citizens of their state, they try them . . .

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[1] Translation in H. Morley, *Ideal Commonwealths*, 1885, p. 224; cf. p. 239.

[2] P. 247.

[3] Ibid.

then they decide concerning them, and admit them with certain ceremonies and oaths'[1] (cf. pp. 22 f., 25).

The *New Atlantis* can hardly be classed with ideal commonwealths, because very little is told us about the constitution of the country, its laws, or the structure of its society. Rawley writes in his preface, that Bacon 'thought also in this present fable to have composed a frame of laws, or of the best state or mould of a commonwealth; but foreseeing it would be a long work, his desire of collecting the Natural History diverted him, which he preferred many degrees before it'. It is clear that when Bacon had described Solomon's House, the chief interest of the story for him was exhausted, and that he grudged any time not spent on the furtherance of his life-work. Rawley writes in his preface to the volume containing the Latin version, that Bacon had declared that the *New Atlantis* was not one of those fragments 'which the author, snatched away by death, or distracted by other business, could not finish, as the *Atlantis* [*Critias*] of Plato'. It belonged rather to the class of fragments 'which the author by agreement and voluntarily abandoned . . . But his Lordship did not abandon them [*Dialogue concerning an Holy War* and *New Atlantis*] through any distaste for the subject, but because he had many other matters which deserved to take precedence of them'.[2] Bacon's deliberate intention of bringing the story to a close is perhaps to be observed in the final paragraph, where the Father of Solomon's House gives permission to publish his account for the good of other nations.

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[1] p. 247 f. Note also their generosity to defeated enemies (p. 245, cf. *N.A.* p. 19); their extreme chastity (p. 226 f., cf. *N.A.* p. 32); their astonishment at European indifference to eugenic principles (p. 224, cf. *N.A.* p. 32); their great attention to diet (pp. 250–3, cf. *N.A.* pp. 38–41). Voyagers discover the city in Taprobane (Ceylon). The inhabitants combine a form of Christianity with Brahminical doctrines.

[2] *Francisci Baconi . . . Operum Moralium et Civilium Tomus*, 1638. 'Duo fragmenta adjici mandavit; Dialogum de Bello Sacro, et Novam Atlantidem. Fragmentorum autem genera tria esse dixit. . . . Secun-

Although Bacon intended his logical method to be applied to politics and ethics,[1] he had not thus applied it himself. His political wisdom was less theoretic than practical, and inclined to opportunism. 'Civil laws', he writes in *The Advancement of Learning*, § 49, 'vary according to the regions and governments where they are planted, though they proceed from the same fountains . . . Philosophers . . . make imaginary laws for imaginary commonwealths, and their discourses are as the stars, which give little light because they are so high.' It is therefore probable that Bacon found the task of framing an ideal constitution uncongenial, if indeed he did not consider it futile.

A few hints may be gathered from the *New Atlantis* as to the political and social conditions in Bensalem. The form of government is monarchical, and has been so for at least 3,000 years (pp. 19, 21). The king has extensive prerogatives, being regarded as debtor to no man, except to those who have served the state by bringing up children (p. 28). The fundamental laws of the kingdom which were laid down 1,900 years ago by King Solamona are still in force (pp. 21 f., 31). They have, as far as we can learn, two principal aims, (1) the maintenance unimpaired of the condition of virtue and prosperity which existed in the legislator's day,

dum eorum, quae auctor ipse, vel morte praereptus, vel aliis negotiis distractus, perficere non potuit; ut Platonis Atlantis. Tertium eorum, quae auctor itidem, ex composito et volens deseruit. Ex quo genere sunt ista duo quae diximus. Neque tamen ea deseruit Dominatio sua, fastidio argumenti, sed quod alia multa habuerat, quae merito antecedere deberent.'

[1] *Nov. Org.* ii, 127.

and (2) the furtherance of human health, happiness, enlightenment, and power by the endowment and regulation of scientific research. Thus the spirit of movement or of progress which dominates the intellectual life of the nation, appears to be totally absent from its political and moral life. The first aim of the legislator is attained by the laws which forbid traffic with foreign countries[1] (p. 22 f.), special precautions, which are both stringent and humane, being taken in the case of chance visitors from the outer world, and the secret emissaries of Solomon's House being alone permitted to travel abroad. Although the existence of the nation is unknown to foreigners, the military art is not neglected (p. 44, cf. p. 19).

In contrast to the commonwealths of Plato, More, and Campanella, society is not organized on a communistic basis, for private property and class distinctions exist. The Tirsans, men who have thirty living descendants above the age of three, receive from the king gifts of 'revenue, and many privileges, exemptions, and points of honour' (p. 28, cf. p. 32, l. 29). The Fathers of Solomon's House apparently constitute a kind of nobility of office, though there is no indication that they have any share in the government of the country. The sanctity of the family, in opposition to the advocacy of community of wives in Plato and Campanella, is emphasized in the laws regarding marriage (p. 32), as well as in the detailed account of the Feast of the Family (p. 26 ff.).

The fragment gives the general impression of a wise, paternal government, which leaves little to private initiative, but diffuses universal contentment. Trades are organized in companies or gilds (p. 34). Wealthy private citizens are required to make provision for public services, as in ancient Athens (p. 34). In Bensalem, unlike most Utopias, distress and vice are not unknown, but relief and censure are administered by family councils, backed by the authority of the state (p. 26), although force is seldom necessary, 'such reverence and obedience they give to the order of Nature'. Christianity, which was miraculously introduced in the apostolic age, is the established religion, but Judaism is tolerated (p. 30).

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[1] The seclusion of Japan, which was effected for similar reasons, and lasted more than two hundred years, is a curious parallel. In 1624-38, all Europeans, except Dutch, were expelled from Japan, and in 1636 the Japanese were forbidden to leave their country.

The praises bestowed upon the happy island are justified by the pervading air of sobriety, order, dignity, religious reverence, courtesy, and social welfare which Bacon has created. The strict incorruptibility of the officials contrasts strangely with his own weakness. But in many respects, not least in their love of refined pageantry and splendour, the qualities of the people reflect the tastes and temperament of the philosopher who imagined them. Of the *New Atlantis* Dr. Abbott observes, 'Bacon has put into it perhaps more of his own self, his tastes, his preferences, his ideals, than into any other of his writings'; and again, 'Rising from the perusal of this little book we can better understand Bacon's whole life and character, and especially his unbounded self-respect and the self-confidence which was the source of some of his best literary efforts and some of his worst political errors'.[1]

Among Bacon's numerous writings, the *New Atlantis* is almost the only work of fiction.[2] Though he shows perhaps a certain lack of practice in this kind of imaginative writing, when he leaves it to the Father of Solomon's

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[1] E. Abbott, *Francis Bacon*, pp. 417, 425.

[2] *Redargutio Philosophiarum* has a slight narrative setting.

House to enumerate in a dry list the wonders of the island, instead of bringing them before the travellers' eyes, yet on the whole the tale affords one of the best examples of Bacon's noble and sonorous style, which is nearly always coloured by his rich imagination, charged with a lofty gravity, and penetrated by his personality, without failing to be flexible and adaptable to the subject. The language of the *New Atlantis* is fuller of grace and vivacity than that of the philosophic works, and more flowing and easy than that of the *Essays*.

It is not, however, in the manners and laws of the nation it describes, nor even in the revelation it affords of Bacon's personality that the chief significance of the tale lies, but in Solomon's House, 'the very eye of this kingdom' (p. 14), 'the noblest foundation, as we think, that ever was upon the earth' (p. 23). The reverence with which its Fathers are received when they travel, the solemn pomp of their progresses, and the majesty with which they give their blessings, invest them with the dignity of a priesthood of science. It is, before all, their labours which have made the nation a shining example to the world. The English Renascence, which brought a flood of visionary hopes and schemes for the renovation of society into the current of the national thought, began, one may say, with the *Utopia*, a dream of regeneration through drastic social legislation, and closed with the *New Atlantis*,[1] in which the change is effected by science. The alteration in the point of view is significant. Bacon, though of a more sanguine temper than More, had no belief in the possibility of fundamental changes in the habits or structure of society, but with a prophetic eye he foresaw the revolution that natural science would effect in human life.

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[1] It is called 'The Epilogue to the Renaissance in England' by Sir S. Lee, *Great Englishmen of the Sixteenth Century*, new edition, p. 304.

In imagining scientific research entrusted to a hierarchy, the members of which have strictly limited functions, Bacon fell into a natural error. As S. R. Gardiner remarks, the *New Atlantis* shows the unity of his political and scientific thought. 'If Bacon had been allowed', he observes, 'to carry out his scheme, it would probably have been found that officialism would have smothered scientific inquiry. At all events, he reached a somewhat similar result in politics. He had improved the official organization of the state only to find it useless for all good purposes in his hands.'[1] Though Bacon underrated the complexity of the task, he felt strongly the need for division of labour in the vast field of science. 'I have heard his lordship speak complainingly,' writes Rawley,[2] 'that his lordship (who thinketh he deserveth to be an architect in this building) should be forced to be a workman and a labourer, and to dig the clay and burn the brick: and more than that . . . to gather the straw and stubble over all the fields to burn the bricks withal.' The volume of scientific data is now immensely greater than what Bacon knew or anticipated. During the Renascence one man could still learn all that was known about a large group of sciences, though specialization was already beginning. In dealing with this new problem of the distribution of labour, to which his own experience forced him, Bacon made what in the light of later history seems the strange mistake of apportioning, not different sciences, but different stages in the general process of investigation to different workers. There must, it is true, always be subordinate workers of various kinds:

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[1] Life of Bacon in *Dict. Nat. Biog.*

[2] Preface to *Sylva Sylvarum*.

explorers, collectors, field naturalists, &c., who gather the materials; students and assistants, who perform minor experiments; calculators and statisticians, who work out the mathematical and other details; editors who collect, summarize and review the results of the world's scientific work in year-books and journals; technicians who apply discoveries to practical ends. Such workers correspond roughly to some of Bacon's classes. But their functions cannot be rigidly prescribed or limited. Thus 'Lamps' or 'Interpreters of Nature' have often been 'Dowry-men' as well. Davy invented the safety lamp, and Kelvin improved the mariner's compass and the telegraph. The higher the work the more vitally important becomes the personal factor, which Bacon almost ignored. The organization of Solomon's House, like Bacon's logical system which it reflects, is too mechanical and inflexible to allow for the free play of genius. There is no room in Bensalem for a Copernicus, a Newton, a Darwin, or a Pasteur. They would never have been Interpreters of Nature if they had not been constantly occupied with humbler work as well. It is astonishing to find the State maintaining a constant succession of neither more nor less than three gorgeously arrayed functionaries to prosecute work, which in reality is the crowning achievement of the patient life-work of the rarest and highest scientific genius.

It can hardly be denied that expectations of a revelation of lofty wisdom are raised in the reader's mind, which the recital of the riches of Solomon's House fails to satisfy. It is noteworthy that at this point, where Bacon embarks upon the theme that lies nearest his heart, the rich and vivid style of the narrative becomes suddenly almost bald. The forecast is remarkable in several ways. One is at first startled by the anticipations of modern inventions, such as the phonograph, the microphone, the aeroplane, the submarine, microscopic diagnosis, inhalation of gases, removal of important organs of the body, synthetic perfumes, high explosives, artificial gems, weather forecasts, and the like. These are in part true divinations of the possibilities inherent in nature, partly fortunate guesses. Bacon has prudently left these inventions undescribed, and to the great detriment of the story he has not allowed his travellers to see any of the wonders of which the land is full (with the trivial exception of some beverages, fruit, and pills). His explanations, had he given any, would probably have differed very widely from the methods which have been actually adopted. How fantastic many of his speculations and proposed experiments were may be seen from *Sylva Sylvarum*, the work most closely connected with this part of the *New Atlantis*. Most of the inventions made in Solomon's House which have not yet been achieved are now known to be impossible, because they depend on false notions regarding nature, still current in Bacon's day. Such inventions are perpetual motion, the production of plants without seed, and of animals in air, and from putrefaction.

A remarkable characteristic of these researches is their predominantly utilitarian nature. Pure disinterested science, which aims, not at any immediate or material benefit to mankind, but at the widening, deepening, and unifying of knowledge, was not indeed ignored by Bacon: the theoretic end of Solomon's House, 'the knowledge of causes', stands first; but almost every experiment performed there has an obvious relation to the needs or pleasures of man. Some processes, it is true, such as the production of extraordinary echoes, or the generation of frogs and flies in air, seem to be of purely theoretical interest, unless, like the automata which copy the movements of men, beasts, birds, fishes, and serpents, and the instruments which imitate their voices, they merely minister to the desire for amusement. The multiplication by art of the varieties of beasts and birds, of delicious fruits, of sweetmeats, pleasant drinks and perfumes, and of precious stones, contributes rather aids to luxury than to human freedom and power. Even such desirable ends as the improvement of health, and the prolongation of life, on which such stress is laid, are conceived rather in the spirit of the elderly valetudinarian than of the officer of public health.[1]

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[1] In the first edition the *New Atlantis* is followed by a list of the chief gains which Bacon anticipated from scientific discovery. As will be seen, it is closely parallel to the achievements of Solomon's House.

Magnalia Naturae, praecipue quoad usus humanos.

The prolongation of life.
The restitution of youth in some degree.
The retardation of age.
The curing of diseases counted incurable.
The mitigation of pain.
More easy and less loathsome purgings.
The increasing of strength and activity.
The increasing of ability to suffer torture or pain.
The altering of complexions, and fatness and leanness.
The altering of statures.
The altering of features.
The increasing and exalting of the intellectual parts.
Versions of bodies into other bodies.
Making of new species.
Transplanting of one species into another.
Instruments of destruction, as of war and poison.
Exhilaration of the spirits, and putting them in good disposition.
Force of the imagination, either upon another body, or upon the body itself.
Acceleration of time in maturations.
Acceleration of time in clarifications.
Acceleration of putrefaction.
Acceleration of decoction.
Acceleration of germination.
Making rich composts for the earth.
Impressions of the air, and raising of tempests.

In such matters as these, Bacon's ideals are sharply contrasted with those of Plato, e.g. in the third book of the *Republic*, and of Sir Thomas More. Plato, like many later reformers, taught that the multiplication of desires tends to the destruction of social health, as well as to the disintegration of individual character. As Macaulay truly observes in his essay on Bacon, ‘it is amusing to think with what horror he would have seen such an institution as Solomon's House rising in his republic: with what vehemence he would have ordered the brew-houses, the perfume-houses, and the dispensatories to be pulled down; and with what inexorable rigour he would have driven beyond the frontier all the Fellows of the College, Merchants of Light and Depredators, Lamps and Pioneers’. Macaulay adds, ‘The aim of the Platonic philosophy was to raise us far above vulgar wants. The aim of the Baconian philosophy was to supply our vulgar wants’. The antithesis is unjust to Bacon, because his system does not profess to be a complete philosophy, but a logical method, which has for its chief end the knowledge of the physical universe. In *The Advancement of Learning* and elsewhere he fully recognizes the claims of divine and moral philosophy, and if he had chosen to complete the *New Atlantis*, its tendency would certainly have appeared less materialistic.

To the austere ideals of More, Bacon's thought is hardly less antagonistic. While the great officers of *Utopia* are clad in undyed wool, those of Bensalem are

Great alteration; as in induration, emollition, &c.
Turning crude and watery substances into oily and unctuous substances.
Drawing of new foods out of substances not now in use.
Making new threads for apparel; and new stuffs; such as paper, glass, &c.
Natural divinations.
Deceptions of the senses.
Greater pleasure of the senses.
Artificial minerals and cements.

resplendent in 'water chamolet of an excellent azure colour, far more glossy than ours' (p. 5), or in sea-water green satin, streamed with gold (p. 28), their shoes are of peach-coloured velvet, and their gloves are set with precious stones (p. 33).[1]

It must not be forgotten that there was little refinement or comfort in the conditions of life in Bacon's England. In a thousand ways there was urgent need for improvement in such matters as hygiene, medicine, and the utilization of natural products and forces for human needs. It is to Bacon's honour that he did not disdain to occupy himself with the humblest and most homely matters which he believed might benefit mankind. Like the Father of Solomon's House, 'he had an aspect as if he pitied men'. He met his death from a chill contracted while stuffing a fowl with snow to test the antiseptic value of refrigeration, and rejoiced to know before he died that the experiment had succeeded.

The *New Atlantis* produced no immediate effect. James I, to whose vanity Solomon's House was intended to appeal, died before Bacon, and the thirty-five years that followed were too full of political contention and war for the establishment of any national foundation for the advancement of science. But during those troublous times private efforts had not ceased. The schemes of Thomas Bushell, a mining engineer who had been Bacon's page and seal-bearer, had no serious importance.

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[1] An account of Bacon's wedding in 1606 states: 'He was clad from top to toe in purple, and hath made himself and his wife such store of raiments of cloth of silver and gold that it draws deep into her portion' (Church, *Bacon*, p. 78). His retinue at the height of his prosperity included two chaplains, six gentlemen of the chamber, six gentlemen waiters, four pages, two gentlemen ushers, three yeomen of the wardrobe, three yeomen of the pantry, and four butlers (Spedding).

He was a dishonest adventurer, who pretended to have received from his master a secret method of extracting enormous wealth from abandoned mines, and professed in a pamphlet[1] published in 1659 that if a concession of such sites were granted him he would with the proceeds found and endow Solomon's House in all its grandeur in the city of Wells. It need hardly be said that nothing was done.

Men of greater ability and honour were however attracted by Bacon's scheme. Sir William Petty, the distinguished economist, then a very young man, published in 1648 *The Advice of W. P. to Mr. Samuel Hartlib, for the Advancement of some particular Parts of Learning*,[2] which is written under the influence of Bacon's teaching, more particularly of the *New Atlantis*. It advocates the founding of an institution for combined research and teaching in the theory and practice of botany, horticulture, anatomy, chemistry, metallurgy, shipbuilding, architecture, and other subjects. There are to be a hospital, a 'botanic theatre', a zoological garden, a museum, an art gallery, a collection of models, an experimental ground for agriculture, laboratories, &c. Provision is to be made for collecting the results of scientific research in all countries, and preparing compendia, to be used as text-books instead of ancient authors.

Abraham Cowley wrote, probably in 1658, and published in 1661, a remarkable *Proposition for the Advancement of Experimental Philosophy*, or, as he otherwise entitled it, in allusion to Bacon, *A Proposition*

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[1] *Mr. Bushell's Abridgement of the Lord Chancellor Bacon's Philosophical Theory in Mineral Prosecutions*, London, 1659, also his *Mineral Overtures*. See Moore Smith, *New Atlantis*, pp. xxviii f.

[2] *Harleian Miscellany*, vi, 1.

for the Advancement of Learning.[1] After exposing, in the true Baconian spirit, the practical futility of the philosophic studies current at the universities, and urging the need of systematic reform in the methods of investigating nature, he unfolds a scheme for the foundation of a 'philosophical college' near London. Although he declares, 'We do not design this after the model of Solomon's House in my Lord Bacon (which is a project for experiments that can never be experimented) but propose it within such bounds of expense as have often been exceeded by the buildings of private citizens', yet many of the details are obviously derived from Bacon's romance. Thus the college is to contain 'a gallery to walk in, adorned with the pictures or statues of all the inventors of any thing useful to human life; as printing, guns, America, &c., and of late in anatomy, the circulation of the blood, the milky veins, and such like discoveries in any art, with short elogies under the portraitures: as likewise the figures of all sorts of creatures, and . . . stuffed skins . . . an anatomy chamber . . . a chamber of all manner of drugs . . . a mathematical chamber . . . great laboratories for chemical operations . . . a garden, destined only to the trial of all manner of experiments concerning plants, as their melioration, acceleration, retardation, conservation, composition, transmutation, coloration, or whatsoever else can be produced by art either for use or curiosity . . . receptacles for all sorts of creatures which the professors shall judge necessary for their more exact search into the nature of animals, and the improvement of their uses to us . . . a very high tower for observation of celestial bodies, adorned with all sorts of dials and such like curiosities . . . very deep vaults made under ground, for experiments most proper to such places, which will be undoubtedly very many.'[1] It is further proposed 'that of the twenty professors four be always travelling beyond seas . . . that the four professors itinerant be assigned to the four parts of the world . . . there to reside three years at least, and to give a constant account of all things that belong to the learning, and especially natural experimental philosophy of those parts.'[2] 'This model', says Bishop Sprat, in his *History of the Royal Society*,[3] 'was in every way practicable; unless perhaps in two things he did more consult the generosity of his own mind than of other mens': the one was the largeness of the revenue with which he would have his college endowed: the other that he imposed on his operators a second task of great pains, the education of youth.'

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[1] In A. Cowley, *Essays*, &c., ed. A. B. Gough, 1915, pp. 21 ff. See also pp. 241–4.

About a year later, in Sept. 1659, Cowley's friend, John Evelyn, the diarist, propounded a similar, but more modest plan for a scientific college, in a letter to the great chemist Robert Boyle.[4] 'We are not to hope', he writes, 'for a mathematical college, much less a Solomon's house, hardly a friend in this sad *catalysis*, and *inter hos armorum strepitus*, a period so uncharitable and perverse.' Nevertheless he suggests a small foundation, where four men of science, including Boyle and himself, shall pursue their researches, aided by 'one laboratory, with a repository for rarities and things of nature; aviary, dovehouses, physic garden, kitchen garden, and a plantation of orchard fruit', &c.

During the Civil Wars, small groups of investigators, inspired largely by the teaching of Bacon, had been pursuing scientific researches, and met for consultation.

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[1] Pp. 31-3.

[2] P. 33 f.

[3] Ed. 1734, p. 59.

[4] *Evelyn's Diary and Correspondence*, ed. Bray, iii, 116-20.

In London such a society was formed in 1645, and commonly known as 'the Invisible College'. In 1648 some of its members, joined by others, began to assemble at Oxford. At the Restoration it became possible for these pioneers to form the 'Society for the Advancement of Experimental Philosophy', to which Cowley dedicated his *Proposition.* That society was formally incorporated in 1662 as 'The Royal Society of London for improving Natural Knowledge'. Among its original members were Petty, Cowley, and Evelyn.

The founders of that great academy, such as John Wallis, the mathematician, and Robert Boyle, the chemist and physicist, acknowledged Bacon as the originator of their plan, and Bishop Sprat, its historian, wrote, 'This foundation of the Royal Society . . . was a work well becoming the largeness of his wit to devise'.[1] Joseph Glanvill says in the Dedication to his *Scepsis Scientifica*, 1665, 'Solomon's house in the *New Atlantis* was a prophetic scheme of the Royal Society'.

Brilliant as the history of that society has been, Solomon's House meant much more. The Royal Society is a central body under state patronage, the fellowship of which implies national recognition, and confers public dignity; it has power to make grants to individuals or societies undertaking special researches, and awards medals for scientific achievements; it provides opportunities for the discussion, registration, co-ordination, and publication of scientific work, and for intercommunication with foreign societies. In these respects it performs, in accordance with modern requirements, many of the functions of the society Bacon desired to see established. But the Royal Society is solely an academy,[2] and has never possessed any equipment for research. It was not till 1799 that certain Fellows of the Royal Society, including Sir Joseph Banks and Count Rumford, founded the Royal Institution, 'to teach the application of science to the useful purposes of life'. It was at the laboratories of the Royal Institution in Albemarle Street that Sir Humphry Davy and Faraday pursued their brilliant researches. A national foundation on a greater scale is the Imperial College of Science and Technology at South Kensington, incorporated in 1907. The British universities gradually made provision for these studies during the latter half of the nineteenth century, with increasing financial aid from the Government. Still it cannot be denied that our country, in spite of its vast resources and industrial activity, has long been strangely neglectful of the organization and endowment of public institutions adequately provided with laboratories and all the appliances requisite for the prosecution of scientific and technical research; although three centuries ago the genius of Bacon with prophetic foresight realized the immense importance of the work both as a source of national health and prosperity, and as a boon to humanity at large.

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[1] *History of the Royal Society*, 1667, p. 144.

[2] At least one scientific academy existed before Bacon wrote the

New Atlantis, viz., the 'Accademia dei Lincei' (i.e. the lynx-eyed), which was founded at Rome in 1603 and closed in 1630. Bacon was proposed for election, but rejected, probably on the ground of his Protestantism.

NEW
ATLANTIS

A Worke vnfiniſhed.

Written by the Right Honourable, FRANCIS
Lord Verulam, Viſcount S^t. Alban.

To the Reader

This *Fable* my *Lord* deuised, to the end that He might exhibite therein, a *Modell* or *Description* of a *Colledge*, instituted for the *Interpreting* of *Nature*, and the Producing of *Great* and *Marueilous Works* for the *Benefit* of *Men*; Vnder the Name of *Salomon's House*, or the *Colledge of the Sixe Dayes Works.* And euen so farre his *Lordship* hath proceeded, as to finish that Part. Certainely, the *Modell* is more Vast, and High, then can possibly be imitated in all things; Notwithstanding most Things therin are within Mens Power to effect. His *Lordship* thought also in this present *Fable*, to haue composed a *Frame* of *Lawes*, or of the *best State* or *Mould* of a *Common-wealth*; But foreseeing it would be a long Worke, his Desire of Collecting the *Naturall History* diuerted him, which He preferred many degrees before it.

This Worke of the *New Atlantis* (as much as concerneth the *English Edition*) his *Lordship* designed for this Place; In regard it hath so neare Affinity (in one Part of it) with the Preceding *Naturall History.*

W: *Rawley*

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NEW ATLANTIS

Wee sayled from *Peru*, (wher wee had continued by the space of one whole yeare,) for *China* and *Iapan*, by the South Sea; taking with vs Victuals for twelue Moneths; And had good Windes from the East, though soft and weake, for fiue Moneths space, and more. But then the Winde came about, and setled in the West for many dayes, so as we could make little or no way, and were sometimes in purpose to turne back. But then againe ther arose Strong and Great Windes from the South, with a Point East; which carried vs vp, (for all that we could doe) towards the North: By which time our Victualls failed vs, though we had made good spare of them. So that finding our selues, in the Midst of the greatest Wildernesse of Waters in the World, without Victuall, we gaue our Selues for lost Men, and prepared for Death. Yet we did lift vp our Harts and Voices to God aboue, who *sheweth his Wonders in the Deepe*; Beseeching him of his Mercy, that as in the *Beginning* He discouered the *Face* of the *Deepe*, and brought forth *Dry-Land*; So he would now discouer Land to vs, that we mought not perish.

And it came to passe, that the next Day about Euening, we saw within a Kenning before vs, towards the North, as it were thick Cloudes, which did put vs in some hope of Land; Knowing how that part of the South Sea was vtterly vnknowne; And might haue Islands, or Continents, that hithertoo were not come to light. Wherefore we bent our Course thither, wher we saw the Appearance of Land, all that night; And in the Dawning of the next Day, we might plainly discerne that it was a Land; Flatt to our sight, and full of Boscage; which made it shew the more Darke. And after an Houre and a halfs Sayling, we entred into a good *Hauen*, being the Port of a faire *Citty*; Not great indeed, but well built, and that gaue a pleasant view from the Sea: And we thinking euery Minute long, till we were on Land, came close to the Shore, and offred to land. But straightwayes we saw diuers of the People, with Bastons in their Hands, (as it were) forbidding vs to land; Yet without any Cries or Fiercenesse, but onely as warning vs off, by Signes that they made. Wherevpon being not a little discomforted, we were aduising with our selues, what we should doe. During which time, ther made forth to vs a small Boate, with about eight Persons in it; wherof One of them had in his Hand a Tipstaffe of a yellow Cane, tipped at both ends with Blew, who came aboard our Shipp, without any shew of Distrust at all. And when he saw one of our Number, present himselfe somewhat afore the rest, he drew forth a little Scroule of Parchment, (somewhat yellower then our Parchment, and shining like the Leaues of Writing Tables, but otherwise soft and flexible,) and deliuered it to our foremost Man. In which Scroule were written in Ancient *Hebrew*, and in Ancient *Greeke*, and in good *Latine* of the Schoole, and in *Spanish*, these wordes; *Land yee not, none of you; And prouide to be gone, from this Coast, within sixteene daies, except you haue further time giuen you. Meanewhile, if you want Fresh Water, or Victuall, or helpe for your Sick, or that your Ship needeth repaire, write downe your wants, and you shall haue that, which belongeth to Mercy.* This Scroule was Signed with a Stampe of *Cherubins Wings*, not spred, but hanging downwards; And by them a *Crosse*. This being deliuered, the *Officer* returned, and left onely a Seruant with vs to receyue our Answeare. Consulting hereupon amongst our Selues, we were much perplexed. The Deniall of Landing, & Hasty Warning vs away, troubled vs much; On the other side, to finde that the People had Languages, and were so full of Humanity, did comfort vs not a little. And aboue all, the Signe of the *Crosse* to that Instrument, was to vs a great Reioycing, and as it were a certaine Presage of Good. Our Answer was in the *Spanish* tongue; *That for our Shipp, it was well; For we had rather mett with Calmes, and contrary windes, then any Tempests. For our Sick, they were many, and in very ill Case; So that if they were not permitted to Land, they ran danger of their Liues.* Our other Wants we sett downe in particular, adding; *That we had some little store of Merchandize, which if it pleased them to deale for, it might supply our Wants, without being chargeable vnto them.* We offred some Reward in Pistoletts vnto the Seruant, and a peece of Crimson Veluett to be presented to the *Officer*: But the Seruant tooke them not, nor would scarce looke vpon them; And so left vs, and went back in another little Boate, which was sent for him.

About three Houres after we had dispatched our Answear, ther came towards vs, a Person (as it seemed) of place. He had on him a Gowne with wide Sleeues, of a kinde of Water Chamolett, of an excellent Azure Colour, farre more glossy then ours: His vnder Apparell was Green; And so was his Hatt, being in the forme of a Turban, daintely made, and not so huge as the *Turkish* Turbans; And the Lockes of his Haire came downe below the Brimms of it. A Reuerend Man was he to behold. Hee came in a Boate, gilt in some part of it, with foure Persons more onely in that Boate; And was followed by another Boate, wherein were some

Twenty. When he was come within a Flightshott of our Shipp, Signes were made to vs, that we should send forth some to meet him vpon the Water; which we presently did in our Shipp-Boate, sending the principall Man amongst vs saue one, and foure of our Number with him. When we were come within sixe yards of their Boate, they called to vs to stay, and not to approach further; which we did. And therupon the Man, whom I before described, stood vp, and with a loud voice, in *Spanish*, asked; *Are yee Christians?* We answered; *We were*; fearing the lesse, because of the *Crosse* we had seen in the Subscription. At which Answear the said Person lift vp his Right Hand towards Heauen, and drew it softly to his Mouth, (which is the Gesture they vse, when they thank God;) And then said: *If yee will sweare*, (*all of you*,) *by the Meritts of the* Saviovr, *that yee are no Pirates; Nor haue shed bloud, lawfully, nor vnlawfully, within fourtie daies past; you may haue License to come on Land.* Wee said; *Wee were all ready to take that Oath.* Wherupon one of those that were with him, being (as it seemed) a *Notary*, made an Entry of this Act. Which done, another of the Attendants of the Great Person, which was with him in the same Boate, after his Lord had spoken a little to him, said aloud; *My Lord would haue you know, that it is not of Pride, or Greatnes, that he commeth not aboard your Shipp; But for that, in your Answear, you declare, that you haue many Sick amongst you, he was warned by the* Conservatour *of* Health, *of the* Citty, *that he should keepe a distance.* We bowed our selues towards him, and answered; *Wee were his humble Seruants; And accounted for great Honour, and singular Humanity towards vs, that which was allready done; But hoped well, that the Nature, of the Sicknes, of our Men, was not infectious.* So he returned; And a while after came the *Notary* to vs aboard our Ship; Holding in his hand a Fruit of that Cuntry, like an Orenge, but of colour between Orenge-tawney and Scarlett; which cast a most excellent Odour. He vsed it (as it seemeth) for a Preseruatiue against Infection. He gave vs our Oath; *By the Name of Iesus, and his Merits:* And after told vs, that the next day, by sixe of the Clocke, in the Morning, we should be sent to, and brought to the *Strangers House*, (so he called it,) wher we should be accommodated of things, both for our Whole, and for our Sick. So he left vs; And when we offred him some Pistoletts, he smiling said; *He must not be twice paid, for one Labour:* Meaning (as I take it) that he had Salary sufficient of the *State* for his Seruice. For (as I after learned) they call an Officer, that taketh Rewards, *Twice-paid.*

The next Morning earely, ther came to vs the same *Officer*, that came to vs at first with his Cane, and told vs; *He came to conduct vs to the* Strangers House; *And that hee had preuented the Houre, because we might haue the whole day before vs, for our Businesse. For* (said he) *If you will follow my Aduice, ther shall first goe with me some few of you, and see the place, and how it may be made conuenient for you; And then you may send for your Sick, and the rest of your Number, which yee will bring on Land.* We thanked him, and said; *That this Care, which he tooke of desolate Strangers,* God *would reward.* And so sixe of vs went on Land with him: And when we were on Land, he went before vs, and turned to vs, and said; *He was but our Seruant, and our Guide.* Hee ledd vs through three faire Streets; And all the way we went, ther were gathered some People on both sides, standing in a Rowe; But in so ciuill a fashion, as if it had beene, not to wonder at vs, but to welcome vs: And diuers of them, as we passed by them, put their Armes a little abroad; which is their

Gesture, when they bid any welcome. The *Strangers House* is a faire and spacious House, built of Brick, of somewhat a blewer Colour then our Brick; And with handsome windowes, some of Glasse, some of a kinde of Cambrick oyl'd. He brought vs first into a faire Parlour aboue staires, and then asked vs; *What Number of Persons we were? And how many sick?* We answered, *We were in all,* (*sick and whole,*) *one and fifty Persons, whereof our sick were seuenteene.* He desired vs to haue patience a little, and to stay till he came back to vs; which was about an Houre after; And then hee led vs to see the Chambers, which were prouided for vs, being in number nineteene. They hauing cast it (as it seemeth) that foure of those Chambers, which were better then the rest, might receiue foure of the principall Men of our Company; And lodge them alone by themselues; And the other 15. Chambers were to lodge vs two and two together. The Chambers were handsome and cheerefull Chambers, and furnished ciuilly. Then he ledd vs to a long Gallery, like a Dorture, where hee shewed vs all along the one side (for the other side was but Wall and Window,) seuenteene Cells, very neat ones, hauing partitions of Cedar wood. Which Gallery, and Cells, being in all fourty, (many more then we needed,) were instituted as an Infirmary for sick Persons. And he told vs withall, that as any of our Sick waxed well, he might be remoued from his Cell, to a Chamber: For which purpose, there were sett forth ten spare Chambers, besides the Number we spake of before. This done, he brought vs back to the Parlour, and lifting vp his Cane a little, (as they doe when they giue any Charge or Commaund) said to vs; *Yee are to know, that the Custome of the Land requireth, that after this day, and too morrow,* (*which we giue you for remouing of your people from your Ship,*) *you are to keepe within dores for* *three daies. But lett it not trouble you, nor doe not think your selues restrained, but rather left to your Rest and Ease. You shall want nothing, and there are sixe of our People appointed to attend you, for any Busines you may haue abroad.* Wee gave him thankes, with all Affection and Respect, and said; God *surely is manifested in this Land.* Wee offred him also twenty Pistoletts; But he smiled, and onely saide; *What? twice paid!* And so he left vs. Soone after our Dinner was serued in; Which was right good Viands, both for Bread, and Meate: Better then any *Collegiate* Diett, that I have knowne in *Europe.* We had also Drinke of three sorts, all wholesome and good; Wine of the Grape; A Drink of Graine, such as is with vs our Ale, but more cleare: And a kinde of Sider made of a Fruit of that Cuntry; A wonderfull pleasing and Refreshing Drink. Besides, ther were brought in to vs, great store of those Scarlett Orenges, for our Sick; which (they said) were an assured Remedy for sicknes taken at Sea. Ther was given vs also, a Boxe of small gray, or whitish Pills, which they wished our Sicke should take, one of the Pills, euery night before sleepe; which (they said) would hasten their Recouery. The next day, after that our Trouble of Carriage, and Remouing of our Men, and Goods, out of our Shipp, was somewhat setled and quiett, I thought good to call our Company together, and when they were assembled, said vnto them; *My deare Frends; Let vs know our selues, and how it standeth with vs. We are Men cast on Land, as* Ionas *was, out of the* Whales Belly, *when we were as buried in the Deepe: And now we are on Land, wee are but between Death and Life; For we are beyond, both the Old World, and the New; And whether euer wee shall see* Europe, God *onely knoweth. It is a kinde of Miracle hath brought vs hither: And it must bee little lesse, that shall bring vs hence*

Therefore in regard of our Deliuerance past, and our danger present, and to come, let vs looke vp to God, *and euery man reforme his owne wayes. Besides we are come here amongst a* Christian People, *full of Piety and Humanity: Let vs not bring that Confusion of face vpon our selues, as to shew our vices, or vnworthinesse before them. Yet there is more. For they haue by Commandement,* (*though in forme of Courtesie*) *Cloistered vs within these Walls, for three dayes: Who knoweth, whether it be not, to take some tast of our manners and conditions? And if they finde them bad, to banish vs straight-wayes; If good to giue us further time. For these Men, that they haue giuen vs for Attendance, may withall haue an eye vpon vs. Therefore for* Gods *loue, and as we loue the weale of our Soules and Bodies, let vs so behaue our selues, as wee may be at peace with* God, *and may finde grace in the Eyes of this People.* Our Company with one voice thanked me for my good Admonition, and promised me to liue soberly and ciuilly, and without giuing any the least occasion of Offence. So we spent our three dayes ioyfully, and without care, in expectation what would be done with vs, when they were expired. During which time, we had euery houre ioy of the Amendment of our Sick; who thought themselves cast into some Diuine *Poole* of *Healing*; They mended so kindely, and so fast.

The Morrow after our three dayes were past, ther came to vs a new Man, that we had not seen before, clothed in Blew as the former was, saue that his Turban was white, with a small red Crosse on the Topp. He had also a Tippet of fine Linnen. At his Comming in, he did bend to vs a little, and put his Armes abroad. Wee of our parts saluted him in a very lowly and submissiue manner; As looking that from him, wee should receyve Sentence of Life, or Death: He desired to speak with some few of vs: Wherupon sixe of vs onely staied, and the rest auoyded the Roome. He said; *I am by Office Gouerner of this House of Strangers, and by Vocation I am a* Christian Priest; *And therfore am come to you, to offer you my seruice, both as Strangers, and chiefly as* Christians. *Some things I may tell you, which I thinke you will not be vnwilling to heare. The State hath giuen you Licence to stay on Land, for the space of sixe weekes: And let it not trouble you, if your occasions aske further time, for the Law in this point is not precise; And I doe not doubt, but my selfe shall be able, to obtaine for you, such further time, as may be conuenient. Yee shall also vnderstand, that the* Strangers House, *is at this time Rich, and much aforehand; For it hath layd vp Reuenew these 37. yeares: For so long it is, since any Stranger arriued in this part: And therfore take yee no care; The* State *will defray you all the time you stay: Neither shall you stay one day the lesse for that. As for any Merchandize yee haue brought, yee shall be well vsed, and haue your returne, either in Merchandize, or in Gold and Siluer: For to vs it is all one. And if you haue any other Request to make, hide it not. For yee shall finde, we will not make your Countenance to fall, by the Answer ye shall receiue. Onely this I must tell you, that none of you must goe aboue a* Karan, (that is with them a Mile and an halfe) *from the walles of the Citty, without especiall leaue.* We answered, after we had looked awhile one vpon another, admiring this gracious and parent-like vsage; *That we could not tell what to say: For wee wanted words to expresse our Thankes; And his Noble free Offers left vs nothing to aske. It seemed to vs, that we had before vs a picture of our* Saluation *in* Heauen: *For wee that were a while since in the Iawes of Death, were now brought into a place, where we found nothing but Consolations. For the Commandement laid vpon vs, we would not faile to* *obey it, though it was impossible, but our Hearts should be enflamed to tread further vpon this Happy and Holy Ground.* Wee added; *That our Tongues should first cleaue to the Roofes of our Mouthes, ere we should forget, either his Reuerend Person, or this whole Nation, in our Prayers.* Wee also most humbly besought him, to accept of vs as his true seruants, by as iust a Right, as euer Men on Earth were bounden; laying and presenting, both our Persons, and all we had, at his feete. He said; *He was a Priest, and looked for a Priests reward; which was our Brotherly loue, and the Good of our Soules and Bodies.* So he went from vs, not without tears of Tendernesse in his Eyes; And left vs also confused with Ioy and Kindnesse, saying amongst our selues; *That wee were come into a Land of Angells, which did appeare to vs dayly, and preuent vs with Comforts, which we thought not of, much lesse expected.*

The next day about 10. of the Clocke, the Gouernour came to vs againe, and after Salutations, said familiarly; *That he was come to visit vs*; And called for a Chaire, and satt him downe; And we, being some 10. of vs, (the rest were of the meaner Sort; or else gone abroad;) sate down with him. And when we were sett, he began thus. *Wee of this Island of Bensalem* (for so they call it in their Language) *haue this; That by meanes of our solitary Situation; and of the Lawes of Secrecy, which we haue for our Trauellers; and our rare Admission of Strangers; we know well most part of the Habitable World, and are our selues vnknowne. Therefore because he that knoweth least, is fittest to aske Questions, it is more Reason, for the Entertainement of the time, that yee aske mee Questions, then that I aske you.* We answered; *That wee humbly thanked him, that he would giue vs leaue so to doe: And that wee conceiued by the tast wee had* *already, that ther was no wor⟨l⟩dly thing on Earth, more worthy to be knowne, then the State of that happy Land. But aboue all* (we said) *since that wee were mett from the seuerall Ends of the World; and hoped assuredly, that we should meete one day in the* Kingdome *of* Heauen (*for that we were both parts* Christians) *wee desired to know* (*in respect that Land was so remote, and so diuided by vast and vnknowne Seas, from the Land, wher our* SAVIOVR *walked on Earth*) *who was the* Apostle *of that Nation, and how it was conuerted to the* Faith? It appeared in his face, that he tooke great Contentment in this our Question: Hee said; *Yee knit my Heart to you, by asking this Question in the first place; For it sheweth that you* First seeke the Kingdome of Heauen; *And I shall gladly, and briefly, satisfie your demaund.*

About twenty Yeares after the Ascension of our SAVIOVR, *it came to passe, that ther was seen by the People of* Renfusa, (*a Citty vpon the Easterne Coast of our Island*,) *within Night*, (*the Night was Cloudy, and Calme*,) *as it might be some mile into the Sea, a great Pillar of Light; Not sharp, but in forme of a Columne, or* Cylinder, *rising from the Sea, a great way vp towards Heauen; and on the topp of it was seene a large Crosse of Light, more bright and resplendent then the Body of the Pillar. Vpon which so strange a Spectacle, the People of the Citty gathered apace together vpon the Sands, to wonder; And so after put themselues into a number of small Boates, to goe nearer to this Marueilous sight. But when the Boates were come within* (*about*) *60. yeards of the Pillar, they found themselues all bound, and could goe no further; yet so as they might moue to goe about, but might not approach nearer: So as the Boates stood all as in a Theater, beholding this Light, as an Heauenly Signe. It so fell out, that ther was in one of the Boates, one of our Wise Men, of the Society*

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1 *worldly*: worldly *M. S.*

of Salomon's House ; *which* House, *or* Colledge (*my good Brethren*) *is the very Eye of this Kingdome ; Who hauing a while attentiuely and deuoutly viewed and contemplated this Pillar, and Crosse, fell downe vpon his face ; And then raysed himselfe vpon his knees, and lifting vp his Hands to Heauen, made his prayers in this manner.*

Lord God *of Heauen and Earth; thou hast vouchsafed of thy Grace, to those of our* Order, *to know thy Workes of Creation, and the Secretts of them ; And to discerne (as farre as appertaineth to the Generations of Men) Between Diuine Miracles, Workes of Nature, Works of Art, and Impostures and Illusions of all sorts. I doe here acknowledge and testifie before this People, that the Thing which we now see before our eyes, is thy* Finger, *and a true* Miracle. *And for-as-much, as we learne in our Bookes, that thou neuer workest Miracles, but to a Diuine and Excellent End, (for the Lawes of Nature are thine owne Lawes, and thou exceedest them not but vpon great cause) wee most humbly beseech thee, to prosper this great Signe ; And to give vs the Interpretation and vse of it in Mercy ; Which thou doest in some part secretly promise, by sending it vnto vs.*

When he had made his Prayer, hee presently found the Boate he was in, moueable and vnbound ; whereas all the rest remained still fast ; And taking that for an assurance of Leaue to approach, he caused the Boate to be softly, and with silence, rowed towards the Pillar. *But ere he came neere it, the* Pillar *and* Crosse *of* Light *brake vp, and cast it selfe abroad, as it were, into a Firmament of many Starres ; which also vanished soone after, and there was nothing left to be seen, but a small* Arke, *or* Chest *of* Cedar, *dry, and not wett at all with water, though it swam. And in the Fore-end of it, which was towards him, grew a small greene Branch of Palme ; And when the wise Man had* *taken it, with all reuerence, into his Boate, it opened of it selfe, and there were found in it, a* Booke, *and a* Letter ; *Both written in fine Parchment, and wrapped in Sindons of Linnen. The* Booke *conteined all the* Canonicall Bookes *of the* Old *and* New Testament, *according as you haue them ; (For we know well what the* Churches *with you receiue ;) And the* Apocalypse *it selfe ; And some other* Bookes *of the* New Testament, *which were not at that time written, were neuerthelesse in the* Booke. *And for the* Letter, *it was in these words.*

I Bartholomew, *a Seruant of the Highest, and Apostle of* IESVS CHRIST, *was warned by an Angell, that appeared to me, in a vision of Glory, that I should commit this* Arke *to the flouds of the Sea. Therefore, I doe testifie and declare, vnto that People, where* GOD *shall ordaine this* Ark *to come to Land, that in the same day, is come vnto them Saluation and Peace, and Good Will, from the* Father, *and from the* LORD IESVS.

There was also in both these writings, as well the Booke, *as the* Letter, *wrought a great Miracle, Conforme to that of the* Apostles, *in the Originall* Gift *of* Tongues. *For there being at that time, in this Land,* Hebrewes, Persians, *and* Indians, *besides the Natiues, euery one redd vpon the* Booke, *and* Letter, *as if they had been written in his owne Language. And thus was this Land saued from Infidelity, (as the Remaine of the Old World was from Water) by an* Ark, *through the Apostolicall and Miraculous* Euangelisme *of* Saint Bartholomew. And here hee paused, and a Messenger came, and called him from vs. So this was all that passed in that Conference.

The next Day, the same Gouernour came againe to vs, immediately after Dinner, and excused himselfe, saying ; That the Day before, he was called from vs, somewhat abruptly, but now he would make vs amends, and spend time with vs; if we held his Company, and Conference agreeable. Wee answered; *That wee held it so agreeable and pleasing to vs, as wee forgot both Dangers past, and Feares to come, for the time wee heard him speake; And that wee thought, an Houre spent with him, was worth Yeares of our former life.* He bowed himselfe a little to vs, and after we were set againe, he said; *Well, the Questions are on your part.* One of our Number said, after a little Pause; *That there was a Matter, wee were no lesse desirous to know, then fearefull to aske, least wee might presume too farre. But encouraged by his rare Humanity towards vs,* (*that could scarce thinke our selues Strangers, being his vowed and professed Seruants,*) *we would take the Hardines to propound it: Humbly beseeching him, if hee thought it not fit to bee answered, that hee would pardon it, though he reiected it.* Wee said; *Wee well obserued those his words, which hee formerly spake, that this happy Island, wher we now stood, was knowne to few, and yet knew most of the Nations of the World; which we found to be true, considering they had the Languages of* Europe, *and knew much of our State and Businesse; And yet we in* Europe, (*notwithstanding all the remote Discoueries and Nauigations of this last Age*) *neuer heard any of the least Inkling or Glimse of this Island. This we found wonderfull strange; For that all Nations haue Enterknowledge one of another, either by Voyage into Forraigne Parts, or by Strangers that come to them: And though the Trauailer into a Forreine Countrey, doth commonly know more by the Eye, then he that stayeth at home can by relation of the Trauailer; Yet both wayes suffice to make a mutuall Knowledge, in some degree, on both parts. But for this Island, wee neuer heard tell of any Shipp of theirs, that had been seene to arriue vpon any shore of* Europe; *No, nor of either the* East *or* West Indies, *nor yet of any Shipp of any other part of the*

World, that had made returne from them. And yet the Maruell rested not in this ; For the Situation *of it* (*as his Lordship said,*) *in the secret Conclaue of such a vast Sea mought cause it. But then, that they should haue Knowledge of the Languages, Bookes, Affaires, of those that lye such a distance from them, it was a thing wee could not tell what to make of ; For that it seemed to vs a condition and Proprietie of Diuine Powers and Beings, to be hidden and vnseene to others, and yet to haue others open, and as in a light to them.* At this speach the Gouernour gaue a gracious smile, and sayd ; *That we did well to aske pardon for this Question we now asked ; For that it imported, as if we thought this Land, a Land of Magicians, that sent forth Spirits of the Ayre into all parts, to bring them Newes and Intelligence of other Countries.* It was answered by vs all, in all possible humblenes, but yet with a Countenance taking knowledge, that we knew he spake it but merrily ; *That we were apt enough to think, ther was somewhat supernaturall in this Island ; but yet rather as Angelicall, then Magicall. But to let his Lordship know truely, what it was, that made vs tender and doubtful to aske this Question, it was not any such conceit, but because we remembred, he had giuen a Touch in his former Speach, that this Land had Lawes of Secrecy touching Strangers.* To this he said ; *You remember it aright : And therefore in that I shall say to you, I must reserue some particulars, which it is not lawfull for mee to reueale ; but there will bee enough left, to giue you satisfaction.*

You shall vnderstand (*that which perhaps you will scarce think credible*) *that about three thousand Yeares agoe, or somewhat more, the Nauigation of the World* (*specially for remote Voyages*) *was greater then at this Day. Doe not thinke with your selues, that I know not how much it is encreased with you, within these sixescore*

Yeares : I know it well ; And yet I say, greater then, than now : Whether it was, that the Example of the Ark, *that saued the Remnant of Men, from the* vniuersall Deluge, *gaue Men confidence to aduenture vpon the Waters ; Or what it was ; but such is the Truth. The* Phœniceans, *and specially the* Tyrians, *had great Fleetes. So had the* Carthaginians *their Colony, which is yet further West. Toward the East the Shipping of* Egypt, *and of* Palestina *was likewise great.* China *also, and the great* Atlantis, (*that you call* America) *which haue now but Iunks, and Canoa's, abounded then in tall Ships. This Island,* (*as appeareth by faithfull Registers of those times*) *had then fifteene hundred strong Ships, of great content. Of all this, there is with you sparing Memory, or none ; But we haue large Knowledge thereof.*

At that time, this Land was knowne and frequented by the Shipps and Vessells of all the Nations before named. And (*as it commeth to passe*) *they had many times Men of other Countries, that were no Saylers, that came with them ; As* Persians, Chaldeans, Arabians*; So as almost all Nations of Might and Fame resorted hither ; Of whom we haue some Stirps, and little Tribes with vs, at this day. And for our owne Ships, they went sundry Voyages ; as well to your* Streights, *which you call the* Pillars *of* Hercules, *As to other parts in the* Atlantique *and* Mediterrane Seas ; *As to* Paguin, (*which is the same with* Cambaline) *and* Quinzy, *vpon the Orientall Seas, as farre as to the Borders of the East* Tartary.

At the same time, and an Age after, or more, the Inhabitants of the great Atlantis *did flourish. For though the Narration and Description, which is made by a great* Man *with you ; that the Descendents of* Neptune *planted there ; and of the Magnificent Temple, Pallace, Citie, and Hill ; And the manifold streames of good(l)y Nauigable Riuers,* (*which as so many Chaines enuironed the same*

Site, and Temple ;) And the seuerall Degrees of Ascent, wherby Men did climb vp to the same, as if it had bin a Scala Cæli ; *be all Poetical & Fabulous : Yet so much is true, that the said Country of* Atlantis ; *As well that of* Peru *then called* Coya, *as that of* Mexico *then named* Tyrambel, *were mighty & proud Kingdomes, in Armes, Shipping, and Riches : So Mighty, as at one time,* (*or at least within the space of* 10. *Years,*) *they both made two great Expeditions ; They of* Tirambel *through the* Atlantique *to the* Mediterrane Sea ; *and they of* Coya *through the South Sea vpon this our Island : And for the former of these, which was into* Europe, *the same Authour amongst you,* (*as it seemeth,*) *had some relation from the* Egyptian Priest, *whom he citeth. For assuredly such a thing ther was. But whether it were the Ancient* Athenians, *that had the glory of the Repulse, and Resistance of those Forces, I can say nothing : But certaine it is, there neuer came backe, either Ship, or Man, from that Voyage. Neither had the other Voyage of those of* Coya *vpon vs, had better fortune, if they had not met with Enemies of greater clemency. For the* King *of this Island,* (*by name* Altabin,) *a wise Man, and a great Warrier ; Knowing well both his owne strength, and that of his Enemies ; handled the matter so, as he cut off their Land-Forces, from their Ships ; and entoyled both their Nauy, and their Campe, with a greater Power then theirs, both by Sea and Land : And compelled them to render themselues without striking stroke : And after they were at his Mercy, contenting himselfe onely with their Oath, that they should no more beare Armes against him, dismissed them all in safety. But the* Diuine Reuenge *ouertooke not long after those proud Enterprises. For within lesse then the space of one Hundred Yeares, the* Great Atlantis *was vtterly lost and destroyed : Not by a great Earthquake, as your* Man *saith ;* (*For that whole Tract is little subiect to Earthquakes ;*) *But by a particular*

Deluge or Inundation; Those Countries hauing, at this Day, farr greater Riuers, and farr higher Mountaines, to poure downe waters, then any part of the Old World. But it is true, that the same Inundation was not deepe; Not past fourty foote, in most places, from the Ground; So that, although it destroyed Man and Beast generally, yet some few wild Inhabitants of the Wood escaped. Birds also were saued by flying to the high Trees and Woods. For as for Men, although they had Buildings in many places, higher then the Depth of the Water; Yet that Inundation, though it were shallow, had a long Continuance; whereby they of the Vale, that were not drowned, perished for want of Food, and other things necessary. So as maruaile you not at the thin Population of America, *nor at the Rudenesse and Ignorance of the People; For you must account your Inhabitants of* America *as a young People; Younger a thousand yeares, at the least, then the rest of the World: For that ther was so much time, betweene the* Vniuersall Floud, *and their* Particular Inundation. *For the poore Remnant of Humane Seed, which remained in their Mountaines, Peopled the Countrey againe slowly, by little and little; And being simple and sauage People, (Not like* Noah *and his* Sonnes, *which was the chiefe Family of the Earth) they were not able to leaue Letters, Arts, and Ciuillity, to their Posterity; And hauing likewise in their Mountanous Habitations beene vsed, (in respect of the Extreame Cold of those* Regions,) *to cloath themselues with the Skinns of Tygers, Beares, and great Hairy Goates, that they haue in those Parts; When after they came downe into the Valley, and found the Intollerable Heates which are there, and knew no meanes of lighter Apparell; they were forced to beginn the Custome of Going Naked, which continueth at this day. Onely they take great pride and delight, in the Feathers of Birds; And this also they tooke from those their Auncestours of* *the Mountaines, who were inuited vnto it, by the infinite Flights of Birdes, that came vp to the high Grounds, while the Waters stood below. So you see, by this maine Accident of Time, wee lost our Traffique with the* Americans, *with whom, of all others, in regard they lay nearest to vs, wee had most Commerce. As for the other Parts of the World, it is most manifest, that in the Ages following,* (*whether it were in respect of Warres, or by a naturall Reuolution of Time,*) *Nauigation did euery wher greatly decay; And specially, farre Voyages,* (*the rather by the vse of Gallies, and such Vessells as could hardly brooke the Ocean,*) *were altogether left and omitted. So then, that part of Entercourse, which could bee from other Nations, to Sayle to vs, you see how it hath long since ceased; Except it were by some rare Accident, as this of yours. But now of the Cessation of that other Part of Entercourse, which mought be by our Sayling to other Nations, I must yeeld you some other Cause. For I cannot say,* (*if I shall say truely,*) *but our Shipping, for Number, Strength, Marriners, Pylots, and all things that appertaine to Nauigation, is as great as euer; And therefore why we should sit at home, I shall now giue you an account by it selfe; And it will draw nearer, to giue you satisfaction, to your principall Question.*

There raigned in this Island, about 1900. *yeares agoe, a* King, *whose memory of all others we most adore; Not Superstitiously, but as a Diuine Instrument, though a Mortall Man: His Name was* Solamona: *And we esteeme him as the* Law-giuer *of our Nation. This* King *had* a large heart, *inscrutable for good; And was wholly bent to make his Kingdome and People Happy. He therefore taking into Consideration, how sufficient and substantiue this Land was, to maintaine it self, without any ayd* (*at all*) *of the Forrainer; Being* 5600. *Miles in circuit, and of rare Fertility of Soyle, in the greatest part* *thereof; And finding also the Shipping of this Country mought bee plentifully set on worke, both by Fishing, and by Transportations from Port to Port, and likewise by Sayling vnto some small Islands that are not farre from vs, and are vnder the Crowne and Lawes of this* State; *And recalling into his Memory, the happy and flourishing Estate, wherein this Land then was; So as it mought bee a thousand wayes altered to the worse, but scarse any one way to the better; thought nothing wanted to his Noble and Heroicall Intentions, but onely (as farr as Humane foresight mought reach) to giue perpetuitie to that, which was in his time so happily established. Therefore amongst his other Fundamentall Lawes of this Kingdome, he did ordaine the Interdicts and Prohibitions, which wee haue touching Entrance of Strangers; which at that time (though it was after the Calamity of* America) *was frequent; Doubting Nouelties, and Commixture of Manners. It is true, the like Law, against the Admission of Strangers without License, is an Ancient Law, in the Kingdome of* China, *and yet continued in vse. But ther it is a poore Thing; And hath made them a curious, ignorant, fearefull, foolish Nation. But our* Law-giuer *made his Law of another temper. For first, hee hath preserued all points of Humanity, in taking Order, and making Prouision for the Reliefe of Strangers distressed; wherof you haue tasted.* At which Speach (as reason was) wee all rose vp, and bowed our selues. Hee went on. *That* King *also still desiring to ioyne Humanity and Pollicy together; And thinking it against Humanity, to detaine Strangers here against their wills; And against Pollicy, that they should returne, and discouer their Knowledge of this Estate, he tooke this Course: He did ordaine, that of the Strangers, that should be permitted to Land, as many (at all times) mought depart as would; But as many as would stay, should haue very good Conditions, and Meanes to* *liue, from the* State. *Wherein hee saw so farre, that now in so many Ages since the Prohibition, wee haue memory not of one Shipp that euer returned, and but of thirteene Persons only, at seuerall times, that chose to returne in our Bottomes. What those few that returned may haue reported abroad I know not. But you must thinke, Whatsoeuer they haue said, could bee taken where they came, but for a Dreame. Now for our Trauelling from hence into Parts abroad, our* Law-giuer *thought fit altogether to restraine it. So is it not in* China. *For the* Chineses *sayle where they will, or can; which sheweth, that their Law of Keeping out Strangers, is a Law of Pusillanimity, and feare. But this restraint of ours, hath one onely Exception, which is admirable; Preseruing the good which commeth by communicating with Strangers, and auoyding the Hurt; And I will now open it to you. And here I shall seeme a little to digresse, but you will by and by finde it pertinent. Yee shall vnderstand,* (*my deare Friends,*) *that amongst the Excellent Acts of that* King, *one aboue all hath the preheminence. It was the Erection, and Institution of an* Order, *or* Society, *which wee call* Salomons House; *The Noblest Foundation,* (*as wee thinke,*) *that euer was vpon the Earth; And the Lanthorne of this Kingdome. It is dedicated to the Study of the* Works, *and* Creatures *of* GOD. *Some thinke it beareth the Founders Name a little corrupted, as if it should be* Solamona's House. *But the Records write it, as it is spoken. So as I take it to bee denominate of the* King *of the* Hebrewes, *which is famous with you, and no Stranger to vs. For wee haue some Parts of his works, which with you are lost; Namely that* Naturall History, *which hee wrote of all* Plants, *from the* Cedar of Libanus, *to the* Mosse that groweth out of the Wall; *And of all* things that haue Life and Motion. *This maketh me thinke, that our* King *finding himselfe to Symbolize, in many things,* *with that* King *of the* Hebrewes (*which liued many yeares before him*) *honoured him with the Title of this Foundation. And I am the rather induced to be of this Opinion, for that I finde in ancient Records, this* Order *or* Societie *is sometimes called* Salomons House; *And sometimes the* Colledge *of* the sixe Daies Workes: *wherby I am satisfied, That our Excellent* King *had learned from the* Hebrewes; *That* God *had created the World, and all that therin is, within sixe Dayes; And therefore hee instituting that* House, *for the finding out of the true Nature of all Things,* (*wherby* God *mought haue the more Glory in the Workemanship of them, and Men the more fruit in the vse of them,*) *did giue it also that second Name. But now to come to our present purpose. When the* King *had forbidden, to all his People, Nauigation into any Part, that was not vnder his Crowne, he made neuerthelesse this Ordinance; That euery twelue yeares ther should be set forth, out of this* Kingdome, *two Ships, appointed to seuerall Voyages; That in either of these Shipps, ther should be a Mission of three of the* Fellowes, *or* Brethren *of* Salomons House; *whose Errand was onely to giue vs Knowledge of the Affaires and State of those Countries, to which they were designed; And especially of the Sciences, Arts, Manufactures, and Inuentions of all the World; And withall to bring vnto vs, Bookes, Instruments, and Patternes, in euery kinde: That the Ships, after they had landed the* Brethren, *should returne; And that the* Brethren *should stay abroad till the new Mission. These Ships are not otherwise fraught, then with Store of* Victualls, *and good Quantitie of Treasure to remaine with the* Brethren, *for the buying of such Things, and rewarding of such Persons, as they should thinke fit. Now for me to tell you, how the Vulgar sort of Marriners are contained from being discouered at Land; And how they that must be put on*

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shore for any time, colour themselues under the Names of other Nations; And to what places these Voyages haue beene designed; And what places of Rendez-Vous *are appointed for the new Missions; And the like Circumstances of the Practique; I may not doe it; Neither is it much to your desire. But thus you see, wee maintaine a Trade, not for Gold, Siluer, or Iewels; Nor for Silkes; Nor for Spices; Nor any other Commodity of Matter; But onely for* GODS *first Creature, which was* Light: *To haue* Light (*I say*) *of the Growth of all Parts of the World.* And when hee had said this, he was silent; And so were wee all. For indeed wee were all astonished, to heare so strange things so probably told. And hee perceiuing, that wee were willing to say somewhat, but had it not ready, in great Courtesie tooke vs off, and descended to aske vs Questions of our Voyage and Fortunes, and in the end concluded, that we mought doe well, to thinke with our selues, what Time of stay wee would demand of the State; And bad vs not to scant our selues; For he would procure such time as wee desired. Wherevpon wee all rose vp, and presented our selues to kisse the skirt of his Tippet; But hee would not suffer vs; and so tooke his leaue. But when it came once amongst our People, that the State vsed to offer Conditions to Strangers, that would stay, wee had Worke enough to get any of our Men to looke to our Shipp; And to keepe them from going presently to the Gouernour, to craue Conditions. But with much adoe wee refrained them, till we mought agree what Course to take.

We took our selues now for free men, seeing ther was no danger of our vtter Perdition; And liued most ioyfully, going abroad, and seeing what was to be seen, in the Citty, and places adiacent, within our *Tedder*; And obtaining Acquaintance with many of the Citty, not of the meanest Quallity; At whose hands we found such Humanity, and such a Freedome and desire, to take Strangers, as it were, into their Bosome, as was enough to make vs forget all that was deare to vs, in our owne Countries: And continually we mett with many things, right worthy of Obseruation, & Relation: As indeed, if ther be a Mirrour in the World, worthy to hold Mens Eyes, it is that Countrey. One day there were two of our Company bidden to a *Feast* of the *Family*, as they call it. A most Naturall, Pious, & Reuerend Custome it is, shewing that Nation to be compounded of all Goodnes. This is the manner of it. It is granted to any Man, that shall liue to see thirty Persons, descended of his Body, aliue together, and all above 3. yeares old, to make this *Feast*, which is done at the Cost of the State. The *Father* of the *Family*, whom they call the *Tirsan*, two dayes before the *Feast*, taketh to him three of such Friends as he liketh to chuse; And is assisted also by the Gouernour of the Citty, or Place, where the *Feast* is celebrated; And all the *Persons* of the *Family*, of both Sexes, are summoned to attend him. These two dayes the *Tirsan* sitteth in Consultation, cōcerning the good Estate of the *Family*. Ther, if ther be any Discord or sutes betweene any of the Family, they are compounded and appeased. Ther, if any of the Family bee Distressed or Decayed, order is taken for their Reliefe, and competent meanes to liue. Ther, if any bee subiect to vice, or take ill Courses, they are reproued and Censured. So likewise, Direction is giuen touching Marriages, and the Courses of life, which any of them should take, with diuers other the like Orders and Aduises. The Gouernour assisteth, to the end, to put in Execution, by his Publicke Authority, the Decrees and Orders of the *Tirsan*, if they should bee disobeyed; Though that seldome needeth; Such

Reuerence and Obedience they giue, to the Order of Nature. The Tirsan doth also then, euer chuse one Man from amongst his Sonnes, to liue in House with him; Who is called, euer after, the *Sonne of the Vine.* The Reason will hereafter appeare. On the *Feast* day, the *Father* or *Tirsan* commeth forth after Diuine Seruice, into a large Roome, where the *Feast* is celebrated; Which Roome hath an Halfe-Pace at the vpper end. Against the wall, in the middle of the halfe-pace, is a Chaire placed for him, with a Table and Carpet before it. Ouer the Chaire is a State, made Round or Ouall, and it is of Iuy; An Iuy somewhat whiter then ours, like the Leafe of a Siluer Aspe, but more shining; For it is greene all Winter. And the State is curiously wrought with Siluer and Silke of diuers Colours, broyding or binding in the Iuy; And is euer of the worke, of some of the Daughters of the Family; And vailed over at the Topp, with a fine Nett of Silke and Siluer. But the Substance of it, is true Iuy; wherof, after it is taken downe, the Friends of the Family, are desirous to haue some Leafe or Sprigg to keepe. The *Tirsan* commeth forth with all his Generation or Linage, the Males before him, and the Females following him; And if there be a Mother, from whose Body the whole Linage is descended, there is a Trauerse placed in a Loft aboue, on the right hand of the Chaire, with a priuy Dore, and a carued Window of Glasse, leaded with Gold and blew; Wher shee sitteth, but is not seene. When the *Tirsan* is come forth, he sitteth downe in the Chaire; And all the Linage place themselues against the wall, both at his back, and vpon the Returne of the Halfe-pace, in Order of their yeares, without difference of Sexe, and stand vpon their Feete. When hee is sett, the Roome being alwaies full of Company, but well kept and without Disorder, after some pause, there commeth in from the lower ende of the Roome, a *Taratan*, (which is as much as an *Herald*;) And on either side of him two *young Lads*; Wherof one carrieth a Scrowle of their shining yellow Parchment; And the other a Cluster of Grapes of Gold, with a long Foote or Stalke. The *Herald*, and *Children*, are cloathed with Mantles of Sea-water greene Sattin; But the *Heralds* Mantle is streamed with Gold, and hath a Traine. Then the *Herald* with three Curtesies, or rather Inclinations, commeth vp as farre as the Halfe-pace; And ther first taketh into his Hand the Scrowle. This Scrowle is the *Kings Charter*, containing Guift of Reuenew, and many Priuiledges, Exemptions, and Points of Honour, granted to the *Father* of the *Family*; And it is euer stiled and directed; *To such an one, Our welbeloued Friend and Creditour:* Which is a Title proper onely to this Case. For they say, the King is Debter to no Man, but for Propagation of his Subiects. The Seale set to the *Kings Charter*, is the Kings Image, Imbossed or moulded in Gold; And though such *Charters* bee expedited of Course, and as of Right, yet they are varied by discretion, according to the Number and Dignitie of the *Family*. This *Charter* the *Herald* readeth aloud; And while it is read, the *Father* or *Tirsan*, standeth vp, supported by two of his Sonnes, such as hee chooseth. Then the *Herald* mounteth the Half-Pace, and deliuereth the *Charter* into his Hand; And with that there is an Acclamation, by all that are present, in their Language, which is thus much; *Happy are the people of Bensalem.* Then the *Herald* taketh into his Hand from the other Child, the Cluster of Grapes, which is of Gold; Both the Stalke, and the Grapes. But the Grapes are daintely enamelled; And if the Males of the *Family* be the greater number, the Grapes

13 many *M. S.*: ma-nany *1627*.

are enamelled Purple, with a little Sunne sett on the Topp; If the Females, then they are enamelled into a greenish yellow, with a Cressant on the Topp. The Grapes are in number as many as there are Descendents of the *Family*. This Golden Cluster, the *Herald* deliuereth also to the *Tirsan*; Who presently deliuereth it ouer to that Sonne, that hee had formerly chosen to bee in House with him; Who beareth it before his *Father*, as an Ensigne of Honour, when he goeth in publicke euer after; And is thereupon called *the Sonne of the Vine*. After this Ceremony ended, the *Father* or *Tirsan* retireth; And after some time commeth forth againe to Dinner, where he sitteth alone vnder the State, as before; And none of his Descendants sit with him, of what Degree or Dignitie soeuer, except he hap to be of *Salomons House*. Hee is serued onely by his owne Children, such as are Male; who performe vnto him all seruice of the Table vpon the knee; And the Women only stand about him, leaning against the wall. The Roome belowe the Halfe-pace, hath Tables on the sides for the Ghests that are bidden; Who are serued with great and comely order; And towards the end of Dinner (which in the greatest Feasts with them, lasteth neuer aboue an Hour and an halfe) there is an *Hymne* sung, varied according to the Inuention of him that composeth it; (for they haue excellent Poesie;) But the Subiect of it is, (alwayes,) the prayses of *Adam*, and *Noah*, and *Abraham*; Wherof the former two Peopled the World, and the last was the *Father* of the *Faithfull*: Concluding euer with a Thankesgiuing for the *Natiuitie* of our *Sauiour*, in whose Birth, the Births of all are onely Blessed. Dinner being done, the *Tirsan* retireth againe; And hauing withdrawne himselfe alone into a place, where hee maketh some priuate Prayers, hee commeth foorth the third time, to giue the Blessing;

with all his Descendants, who stand about him, as at the first. Then he calleth them forth by one and by one, by name, as he pleaseth, though seldome the Order of Age bee inuerted. The person that is called, (the Table being before remoued,) kneeleth downe before the Chaire, and the *Father* layeth his Hand, vpon his Head, or her Head, and giueth the Blessing in these Wordes; *Sonne of Bensalem,* (or *Daughter of Bensalem,*) *thy Father saith it; The Man by whom thou hast Breath and Life speaketh the word; The Blessing of the Euerlasting Father, the Prince of Peace, and the Holy Doue, bee vpon thee, and make the dayes of thy Pilgrimage, good, and many.* This he saith to euery of them; And that done, if there be any of his Sonnes, of eminent Meritt and Vertue, (so they be not aboue two,) hee calleth for them againe; And saith, laying his Arme ouer their shoulders, they standing; *Sonnes, it is well yee are borne, giue God the prayse, and perseuere to the end.* And withall deliuereth to either of them a Iewel, made in the Figure of an Eare of Wheat, which they euer after weare in the front of their Turban, or Hat. This done, they fall to Musick and dances, And other Recreations, after their manner, for the rest of the day. This is the full order of that *Feast.*

By that time, sixe or seuen Dayes were spent, I was fallen into straight Acquaintance, with a *Merchant* of that *Citty,* whose name was *Ioabin.* Hee was a *Iew* and *Circumcised*: For they haue some few Stirps of *Iewes* yet remaining amongst them, whom they leaue to their owne Religion. Which they may the better doe, because they are of a farre differing Disposition from the *Iewes* in other Parts. For whereas they hate the *Name* of CHRIST; And have a secret inbred Rancour against the People amongst whom they liue; These (contrariwise) giue vnto our SAVIOVR many high Attributes, and loue the *Nation* of *Bensalem*, extreamely. Surely this Man, of whom I speake, would euer acknowledge, that Christ was borne of a *Virgin*; And that hee was more then a Man; And hee would tell how God made him Ruler of the *Seraphims*, which guard his Throane; And they call him also the *Milken Way*, and the *Eliah* of the *Messiah*; And many other High Names; which though they be inferiour to his Diuine Maiestie, Yet they are farre from the Language of other *Iewes*. And for the Countrey of *Bensalem*, this Man would make no end of commending it; Being desirous by Tradition amongst the *Iewes* there, to haue it beleeued, that the People thereof were of the Generations of *Abraham*, by another Sonne, whom they call *Nachoran*; And that *Moses* by a secret *Cabala* ordained the Lawes of *Bensalem* which they now vse; And that when the *Messiah* should come, and sit in his Throne at *Hierusalem*, the King of *Bensalem*, should sit at his feete, whereas other Kings should keepe a great distance. But yet setting aside these *Iewish* Dreames, the Man was a wise Man, and learned, and of great Pollicy, and excellently seene in the Lawes and Customes of that Nation. Amongst other Discourses, one day, I told him, I was much affected with the Relation I had, from some of the Company, of their Custome, in holding the *Feast* of the *Family*; For that (me thought) I had neuer heard of a Solemnity, wherein Nature did so much preside. And because Propagation of Families proceedeth from the Nuptiall Copulation, I desired to know of him, what Lawes and Customes they had concerning Marriage; And whether they kept Marriage well; And whether they were tyed to one Wife; For that wher Population is so much affected, and such as with them it seemed to be, ther is commonly Permission of *Plurality* of *Wiues*. To this he said; *You haue Reason for to* *commend that excellent Institution of the* Feast *of the* Family. *And indeed wee haue Experience, that those Families, that are partakers of the Blessing of that Feast, doe flourish and prosper euer after, in an extraordinary manner. But heare mee now, and I will tell you what I know. You shall vnderstand, that there is not under the Heauens, so chast a Nation, as this of Bensalem; Nor so free from all Pollution, or foulenesse. It is the Virgin of the World. . . .*

I have not read of any such Chastity, in any People, as theirs: And their vsuall saying is, That whosoeuer is vnchast cannot reuerence himselfe: *And they say;* That the Reuerence of a Mans selfe, is, next Religion, the chiefest Bridle of all Vices. And when hee had said this, the good *Iew* paused a little; Whereupon, I farr more willing to heare him speake on, then to speake my selfe; yet thinking it decent, that vpon his pause of Speech, I should not be altogether silent, said onely this; *That I would say to him, as the* Widow *of* Sarepta *said to* Elias; *that he was come to bring to Memory our Sinnes; And that I confesse the* Righteousnesse *of* Bensalem, *was greater then the* Righteousnesse *of* Europe. At which speech hee bowed his Head, and went on in this manner. *They haue also many wise and excellent Lawes touching* Marriage. *They allow no* Polygamy. *They haue ordained that none doe intermarry or contract, vntill a Moneth bee past from their first Inter-viewe.* Marriage *without consent of Parents they doe not make void, but they mulct it in the Inheritours: For the Children of such* Marriages, *are not admitted to inherit aboue a third Part of their Parents Inheritance. . . .*

And as wee were thus in Conference, ther came one that seemed to be a Messenger, in a rich Huke, that spake with the *Iew*: Whereupon hee turned to mee, and said; *You will pardon mee, for I am commanded* *away in hast.* The next Morning he came to me againe, ioyfull as it seemed, and said; *There is word come to the Gouernour of the Citty, that one of the* Fathers *of* Salomons House, *will be here this day Seuen-night: Wee haue seene none of them this Dozen Yeares. His Comming is in State; But the Cause of his comming is secret. I will prouide you, and your Fellowes, of a good Standing, to see his Entry.* I thanked him, and told him; *I was most glad of the Newes.* The Day being come he made his Entry. He was a *Man* of middle Stature, and Age, comely of Person, and had an Aspect as if he pittied Men. He was cloathed in a Roabe of fine black Cloath, with wide Sleeues and a Cape. His vnder Garment was of excellent white Linnen, downe to the Foote, girt with a Girdle of the same; And a Sindon or Tippett of the same about his Neck. He had Gloues, that were curious, and sett with Stone; And Shoes of Peach-coloured Veluet. His Neck was bare to the Shoulders. His Hatt was like a Helmett, or *Spanish Montera;* And his Locks curled below it decently: They were of Colour browne. His Beard was cutt round, and of the same colour with his Haire, somewhat lighter. He was carried in a rich Chariott, without Wheeles, Litter-wise; With two Horses at either end, richly trapped in blew Veluett Embroydered; and two Footmen on each side in the like Attire. The Chariott was all of Cedar, gilt, and adorned with Crystall; Saue that the Fore-end had Pannells of Sapphires, set in Borders of Gold; And the Hinder-end the like of Emerauds of the *Peru* Colour. Ther was also a Sunn of Gold, Radiant, vpon the Topp, in the Midst; And on the Topp before, a small *Cherub* of Gold, with Wings displayed. The Chariott was couered with Cloath of Gold tissued vpon Blew. He had before him fifty

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Attendants, young Men all, in white *Satten* loose Coates to the Mid Legg; And Stockins of white Silk; And Shoes of blew Veluet; And Hatts of blew Veluett; with fine Plumes of diuerse Colours, sett round like Hat-bands. Next before the Chariott, went two Men, bare headed, in Linnen Garments downe to the Foote, girt, and Shoes of blew Veluett; Who carried, the one a Crosier, the other a Pastorall Staffe like a Sheep-hooke: Neither of them of Mettall, but the Crosier of Balme-wood, the Pastorall Staffe of Cedar. Horse-Men he had none, neither before, nor behinde his Chariott: As it seemeth to auoyd all Tumult and Trouble. Behinde his Chariott, went all the Officers and Principalls of the Companies of the Citty. He sate alone, vpon Cushions, of a kinde of excellent Plush, blew; And vnder his Foote curious Carpetts of Silk of diuerse Colours, like the Persian, but farr finer. He held vp his bare Hand, as he went, as blessing the People, but in Silence. The Street was wonderfully well kept; So that ther was neuer any Army had their Men stand in better Battell-Array, then the People stood. The Windowes likewise were not crouded, but euery one stood in them, as if they had been placed. When the shew was past, the *Iew* said to me; *I shall not be able to attend you as I would, in regard of some charge the Citty hath lay'd vpon me, for the Entertaining of this Great Person.* Three dayes after the *Iew* came to me againe, and said; *Yee are happy Men; for the* Father *of* Salomons House *taketh knowledge of your Being here, and commanded me to tell you, that he will admitt all your Company to his presence, and haue priuate Conference with one of you, that ye shall choose: And for this hath appointed the next day after too Morrow. And because he meaneth to giue you his Blessing, he hath appointed it in the Forenoone.* We came at our Day, and Houre, and I was chosen by my Fellowes for the priuate Accesse. We found him in a faire Chamber, richly hanged, and carpetted vnder Foote, without any Degrees to the State. He was sett vpon a Low Throne richly adorned, and a rich Cloath of State ouer his Head, of blew Sattin Embroidered. He was alone, saue that he had two Pages of Honour, on either Hand one, finely attired in White. His Vnder Garments were the like that we saw him weare in the Chariott; but in stead of his Gowne, he had on him a Mantle with a Cape, of the same fine Black, fastned about him. When we came in, as we were taught, we bowed Lowe at our first Entrance; And when we were come neare his Chaire, he stood vp, holding forth his Hand vngloued, and in Posture of Blessing; And we euery one of vs stooped downe, and kissed the Hemme of his Tippett. That done, the rest departed, and I remayned. Then hee warned the Pages forth of the Roome, and caused mee to sit downe beside him, and spake to me thus in the *Spanish Tongue.*

GOD *blesse thee, my Sonne; I will giue thee the greatest Iewell I haue: For I will impart vnto thee, for the Loue of* GOD *and Men, a Relation of the true State of* Salomons House. *Sonne, to make you know the true state of* Salomons House, *I will keepe this order. First I will set forth vnto you the* End *of our* Foundation. *Secondly, the* Preparations *and* Instruments *we haue for our* Workes. *Thirdly, the seuerall* Employments *and* Functions *wherto our* Fellowes *are assigned. And fourthly, the* Ordinances *and* Rites *which we obserue.*

The End *of our* Foundation *is the Knowledge of* Causes, *and Secrett Motions of Things; And the Enlarging of the bounds of* Humane Empire, *to the Effecting of all Things possible.*

The Preparations *and* Instruments *are these. We haue large and deepe* Caues *of seuerall Depths : The deepest are sunke 600. Fathome : And some of them are digged and made vnder great Hills and Mountaines : So that if you reckon together the Depth of the Hill, and the Depth of the* Caue, *they are* (*some of them*) *aboue three Miles deepe. For wee finde, that the Depth of a Hill, and the Depth of a* Caue *from the Flat, is the same Thing ; Both remote alike, from the Sunn and Heauens Beames, and from the Open Aire. These* Caues *we call the* Lower Region ; *And wee vse them for all* Coagulations, Indurations, Refrigerations, *and* Conseruations *of* Bodies. *We vse them likewise for the* Imitation *of* Naturall Mines ; *And the* Producing *also of* New Artificiall Mettalls, *by* Compositions *and* Materialls *which we vse, and lay ther for many yeares. Wee vse them also sometimes,* (*which may seeme strange,*) *for* Curing *of some* Diseases, *and for* Prolongation *of* Life, *in some* Hermits *that choose to liue ther, well accommodated of all things necessarie, and indeed liue very long ; By whom also we learne many things.*

We haue Burialls *in seuerall* Earths, *wher we put diuerse* Cements, *as the* Chineses *doe their* Porcellane. *But we haue them in greater Varietie, and some of them more fine. We haue also great variety of* Composts, *and* Soiles, *for the Making of the Earth Fruitfull.*

We haue High Towers ; *The Highest about halfe a Mile in Heigth ; And some of them likewise set vpon High* Mountaines : *So that the Vantage of the Hill with the* Tower, *is in the highest of them three Miles at least. And these Places wee call the* Vpper Region ; *Accounting the Aire betweene the* High Places, *and the* Lowe, *as a* Middle Region. *Wee vse these* Towers, *according to their seuerall Heights, and Situations, for* Insolation, Refrigeration, Conseruation ; *And for the* View *of diuers* Meteors ; *As*

Windes, Raine, Snow, Haile; *And some of the* Fiery Meteors *also. And vpon them, in some Places, are Dwellings of* Hermits, *whom wee visit sometimes, and instruct what to obserue.*

We haue great Lakes, *both* Salt, *and* Fresh; *wherof we haue vse for the* Fish, *and* Fowle. *We vse them also for* Burialls *of some* Naturall Bodies: *For we finde a Difference in Things buried in* Earth, *or in Aire below the* Earth; *and things buried in* Water. *We haue also* Pooles, *of which some doe straine* Fresh Water *out of* Salt; *And others by Art doe turne* Fresh Water *into* Salt. *We haue also some* Rocks *in the Midst of the* Sea; *And some* Bayes *vpon the* Shore *for some* Works, *wherin is required the* Ayre *and* Vapour *of the* Sea. *We haue likewise* Violent Streames *and* Cataracts, *which serue vs for many* Motions: *And likewise* Engines *for* Multiplying *and* Enforcing *of* Windes, *to set also on going diuerse* Motions.

We haue also a Number of Artificiall Wels, *and* Fountaines, *made in Imitation of the* Naturall Sources *and* Baths; *As tincted vpon* Vitrioll, Sulphur, Steele, Brasse, Lead, Nitre, *and other* Mineralls. *And againe wee haue little* Wells *for* Infusions *of many* Things, *wher the* Waters *take the Vertue quicker and better, then in* Vessells, *or* Basins. *And amongst them we haue a* Water, *which wee call* Water *of* Paradise, *being, by that we doe to it, made very Soueraigne for* Health, *and* Prolongation *of* Life.

We haue also Great *and* Spatious Houses, *wher we imitate and demonstrate* Meteors; *As* Snow, Haile, Raine, *some* Artificiall Raines *of* Bodies, *and not of* Water, Thunders, Lightnings; *Also* Generations *of* Bodies *in* Aire; *As* Froggs, Flies, *and diuerse Others.*

We haue also certaine Chambers, *which wee call*

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Chambers *of* Health, *wher wee qualifie the* Aire *as we thinke good and proper for the* Cure *of diuerse* Diseases, *and* Preseruation *of* Health.

Wee haue also faire and large Baths, *of seuerall* Mixtures, *for the* Cure *of* Diseases, *and the* Restoring *of* Mans Body *from* Arefaction: *And Others for the* Confirming *of it in* Strength *of* Sinnewes, Vitall Parts, *and the very* Iuyce *and* Substance *of the* Body.

We haue also large and various Orchards, *and* Gardens; *Wherin we do not so much respect Beauty, as Variety of Ground and Soyle, proper for diuerse* Trees, *and* Herbs: *And some very spatious, wher* Trees, *and* Berries *are set, wherof we make diuerse Kinds of* Drinks, *besides the* Vine-yards. *In these wee practise likewise all Conclusions of* Grafting, *and* Inoculating, *as well of* Wilde-Trees, *as* Fruit-Trees, *which produceth many Effects. And we make (by Art) in the same* Orchards, *and* Gardens, Trees *and* Flowers, *to come earlier, or later, then their* Seasons; *And to come vp and beare more speedily then by their* Naturall Course *they doe. We make them also by* Art *greater much then their* Nature; *And their* Fruit *greater, and sweeter, and of differing* Tast, Smell, Colour, *and* Figure, *from their* Nature. *And many of them we so Order as they become of* Medicinall Vse.

Wee haue also Meanes to make diuerse Plants, *rise by* Mixtures *of* Earths *without* Seedes; *And likewise to make diuerse New* Plants, *differing from the Vulgar; and to make one* Tree *or* Plant *turne into another.*

We haue also Parks, *and* Enclosures *of all Sorts, of* Beasts, *and* Birds; *which wee vse not onely for View or Rarenesse, but likewise for* Dissections, *and* Trialls; *That therby we may take light, what may be wrought vpon the* Body *of* Man. *Wherin we finde many strange Effects; As* Continuing Life *in them, though diuerse* Parts, *which* *you a(c)count* Vitall, *be perished, and taken forth;* Resussitating *of some that seeme* Dead *in* Appearance; *And the like. We try also all* Poysons, *and other* Medicines *vpon them, as well of* Chyrurgery, *as* Phisicke. *By* Art *likewise, we make them* Greater, *or* Taller, *then their* Kinde *is; And contrary-wise* Dwarfe *them and stay their* Grouth: *Wee make them more* Fruitfull, *and* Bearing *then their* Kind *is; and contrary-wise* Barren *and not* Generatiue. *Also we make them differ in* Colour, Shape, Actiuity, *many wayes. We finde Meanes to make* Commixtures *and* Copulations *of diuerse* Kindes; *which haue produced many* New Kindes, *and them not* Barren, *as the generall Opinion is. We make a Number of* Kindes, *of* Serpents, Wormes, Flies, Fishes, *of* Putrefaction; *Wherof some are aduanced (in effect) to be* Perfect Creatures, *like* Beastes *or* Birds; *And haue* Sexes, *and doe* Propagate. *Neither doe we this by* Chance, *but wee know before hand, of what* Matter *and* Commixture, *what* Kinde *of those* Creatures *will arise.*

Wee haue also Particular Pooles, *wher we make* Trialls *vpon* Fishes, *as we haue said before of* Beasts, *and* Birds.

Wee haue also Places *for* Breed *and* Generation *of those* Kindes *of* Wormes, *and* Flies, *which are of* Speciall Vse; *Such as are with you your* Silkwormes, *and* Bees.

I will not hold you long with recounting of our Brew-Howses, Bake-Howses, *and* Kitchins, *wher are made diuerse* Drinks, Breads, *and* Meats, *Rare, and of speciall Effects.* Wines *we haue of* Grapes; *And* Drinkes *of other* Iuyce, *of* Fruits, *of* Graines, *and of* Rootes; *And of* Mixtures *with* Honey, Sugar, Manna, *and* Fruits dryed, *and* decocted: *Also of the* Teares *or* Woundings, *of* Trees; *And of the* Pulp *of* Canes. *And these* Drinkes *are of seuerall* Ages, *some to the* Age *or Last of fourtie*

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yeares. We haue Drinks *also brewed with seuerall* Herbs, *and* Roots, *and* Spices; *Yea with seuerall* Fleshes, *and* White-Meates; *Wherof some of the* Drinkes *are such, as they are in effect* Meat *and* Drinke *both: So that Diuerse, especially in* Age, *doe desire to liue with them, with little or no* Meate, *or* Bread. *And aboue all wee striue to haue* Drinks *of* Extreame Thin Parts, *to insinuate into the* Body, *and yet without all* Biting, Sharpenesse, *or* Fretting; *Insomuch as some of them, put vpon the* Back *of your* Hand, *will, with a little stay, passe through to the* Palme, *and yet taste* Milde *to the* Mouth. *Wee haue also* Waters, *which we ripen in that fashion, as they become* Nourishing; *So that they are indeed excellent* Drinke; *And Many will vse no other.* Breads *we haue of seuerall* Graines, Roots, *and* Kernells; *Yea and some of* Flesh, *and* Fish, Dryed; *With diuerse kindes of* Leauenings, *and* Seasonings: *So that some doe extreamely moue* Appetites; *Some doe Nourish so, as diuerse doe liue of them, without any other* Meate; *Who liue very long. So for* Meates, *wee haue some of them so* beaten, *and made* tender, *and* mortified, *yet without all* Corrupting, *as a* Weake Heate *of the* Stomach *will turne them into good* Chylus; *As well as a* Strong Heate *would* Meate *otherwise prepared. We haue some* Meates *also, and* Breads, *and* Drinks, *which taken by Men, enable them to* Fast *long after; And some other, that vsed make the very* Flesh *of* Mens Bodies, *sensibly, more* Hard *and* Tough; *And their* Strength *farre greater, then otherwise it would bee.*

Wee haue Dispensatories, *or* Shops *of* Medicines. *Wherin you may easely thinke, if we haue such* Variety of Plants, *and* Liuing Creatures, *more then you haue in* Europe, (*for we know what you haue,*) *the* Simples, Druggs, *and* Ingredients *of* Medicines, *must likewise be in so much the greater* Variety. *Wee haue them likewise* *of diuerse* Ages, *and long* Fermentations. *And for their* Preparations, *wee haue not onely all Manner of Exquisite* Distillations, *and* Separations, *and especially by* Gentle Heates, *and* Percolations *through diuerse* Strainers, *yea and* Substances ; *But also exact* Formes *of* Composition, *wherby they incorporate allmost, as they were* Naturall Simples.

Wee haue also diuerse Mechanicall Arts, *which you haue not ; And* Stuffes *made by them ; As* Papers, Linnen, Silks, Tissues ; *dainty* Works *of* Feathers *of wonderfull Lustre ; excellent* Dies, *and many others : And* Shops *likewise, as well for such as are not brought into Vulgar vse amongst vs, as for those that are. For you must know, that of the Things before recited, many of them are growne into vse throughout the Kingdome ; But yet, if they did flow from our* Inuention, *wee haue of them also for* Patternes *and* Principalls.

Wee haue also Fournaces *of great* Diuersities, *and that keepe great* Diuersitie *of* Heates : Fierce *and* Quicke ; Strong *and* Constant ; Soft *and* Milde ; Blowne, Quiet, Dry, Moist ; *And the like. But aboue all we haue* Heates, *in Imitation of the* Sunnes *and* Heauenly Bodies Heates, *that passe diuerse* Inequalities, *and* (*as it were*) Orbs, Progresses, *and* Returnes, *wherby we produce admirable effects. Besides wee haue* Heates *of* Dungs ; *and of* Bellies *and* Mawes *of* Liuing Creatures, *and of their* Blouds, *and* Bodies ; *and of* Hayes *and* Herbs *layd vp moist ; of* Lime *vnquenched ; and such like.* Instruments *also which generate* Heate *onely by* Motion. *And further,* Places *for Strong* Insolations ; *And againe* Places *vnder the* Earth, *which by* Nature, *or* Art, *yeeld* Heate. *These diuerse* Heates *wee vse, As the* Nature *of the* Operation, *which wee intend, requireth.*

Wee haue also Perspectiue-Houses, *wher wee make* Demonstrations *of all* Lights, *and* Radiations : *And of* *all* Colours: *And out of* Things vncoloured *and* Transparent, *wee can represent vnto you all seuerall* Colours; *Not in* Raine-Bowes, (*as it is in* Gemms, *and* Prismes,) *but of themselues Single. Wee represent also all* Multiplications *of* Light, *which wee carry to great* Distance, *and make so* Sharp, *as to discerne small* Points *and* Lines. *Also all* Colourations *of* Light; *All* Delusions *and* Deceits *of the* Sight, *in* Figures, Magnitudes, Motions, Colours: *All* Demonstrations *of* Shadowes. *Wee finde also diuerse Meanes yet vnknowne to you, of* Producing *of* Light, *originally, from diuerse* Bodies. *Wee procure meanes of Seeing* Obiects a-farr off; *As in the* Heauen, *and* Remote Places: *And represent* Things Neare *as* A-farr off; *And* Things A-farr off *as* Neare; *Making* Faigned Distances. *Wee haue also* Helps *for the* Sight, *farre aboue* Spectacles *and* Glasses *in vse. Wee haue also* Glasses *and* Meanes, *to see* Small *and* Minute Bodies, *perfectly and distinctly; As the* Shapes *and* Colours *of* Small Flies *and* Wormes, Graines *and* Flawes *in* Gemmes *which cannot otherwise be seen,* Obseruations *in* Vrine & Bloud *not otherwise to be seen. Wee make* Artificiall Raine-Bowes, Halo's, *and* Circles *about* Light. *Wee represent also all manner of* Reflexions, Refractions, *and* Multiplications *of* Visuall Beames *of* Obiects.

Wee haue also Pretious Stones *of all kindes, many of them of great Beauty, and to you vnknowne:* Crystalls *likewise; And* Glasses *of diuerse kindes; And amongst them some of* Mettals Vitrificated, *and other* Materialls, *besides those of which you make* Glasse. *Also a Number of* Fossiles, *and* Imperfect Mineralls, *which you haue not. Likewise* Loadstones *of Prodigious Vertue: And other rare* Stones, *both* Naturall, *and* Artificiall.

Wee haue also Sound-Houses, *wher wee practise and demonstrate all* Sounds, *and their* Generation. *Wee haue*

Harmonies *which you haue not, of* Quarter-Sounds, *and lesser* Slides *of* Sounds. *Diuerse* Instruments *of* Musick *likewise to you vnknowne, some* sweeter *then any you haue; Together with* Bells *and* Rings *that are dainty and sweet. Wee represent* Small Sounds *as* Great *and* Deepe; *Likewise* Great Sounds, Extenuate *and* Sharpe; *Wee make diuerse* Tremblings *and* Warblings *of* Sounds, *which in their* Originall *are* Entire. *Wee represent and imitate all* Articulate Sounds *and* Letters, *and the* Voices *and* Notes of Beasts *and* Birds. *Wee haue certaine* Helps, *which sett to the* Eare *doe further the* Hearing *greatly. Wee haue also diuerse* Strange *and* Artificiall Eccho's, Reflecting *the* Voice *many times, and as it were* Tossing *it: And some that giue back the* Voice Lowder *then it came, some* Shriller, *and some* Deeper; *Yea some rendring the* Voice, Differing *in the* Letters *or* Articulate Sound, *from that they receyue. Wee haue also meanes to conuey* Sounds *in* Trunks *and* Pipes, *in strange* Lines, *and* Distances.

Wee haue also Perfume-Houses; *wherwith we ioyne also* Practises *of* Tast. *Wee* Multiply Smells, *which may seeme strange. Wee* Imitate Smells, *making all* Smells *to breath out of other* Mixtures *then those that giue them. Wee make diuerse* Imitations *of* Tast *likewise, so that they will deceyue any* Mans Tast. *And in this* House *wee containe also a* Confiture-House, *wher wee make all* Sweet-Meats, Dry *and* Moist; *And diuerse pleasant* Wines, Milks, Broaths, *and* Sallets, *farr in greater variety, then you haue.*

Wee haue also Engine-Houses, *wher are prepared* Engines *and* Instruments *for all Sorts of* Motions. *Ther we imitate and practise to make* Swifter Motions, *then any you haue, either out of your* Musketts, *or any* Engine *that you haue: And to* Make *them, and* Multiply *them more* Easily, *and with* Small Force, *by* Wheeles, *and* *other* Meanes: *And to make them* Stronger, *and more* Violent, *then yours are; Exceeding your greatest* Cannons, *and* Basilisks. *Wee represent also* Ordnance *and* Instruments *of* Warr, *and* Engines *of all Kindes: And likewise New* Mixtures *and* Compositions *of* Gun-Powder, Wilde-Fires *burning in* Water, *and* Vnquenchable. *Also* Fire-workes *of all* Variety, *both for* Pleasure, *and* Vse. *Wee imitate also* Flights *of* Birds; *Wee haue some* Degrees *of* Flying *in the* Ayre. *Wee haue* Shipps *and* Boates *for* Going vnder Water, *and* Brooking of Seas; *Also* Swimming-Girdles *and* Supporters. *Wee haue diuers curious* Clocks; *And other like* Motions *of* Returne: *And some* Perpetuall Motions. *Wee imitate also* Motions *of* Liuing Creatures, *by* Images, *of* Men, Beasts, Birds, Fishes, *and* Serpents. *Wee haue also a great Number of other Various* Motions, *strange for* Equality, Finenesse, and Subtilty.

Wee haue also a Mathematicall House, *wher are represented all* Instruments, *as well of* Geometry, *as* Astronomy, *exquisitely made.*

Wee haue also Houses of Deceits of the Senses; *wher we represent all manner of* Feates *of* Iugling, False Apparitions, Impostures, *and* Illusions; *And their* Fallaces. *And surely you will easily beleeue, that wee, that haue so many* Things *truely* Naturall, *which induce* Admiration, *could in a* World *of* Particulars deceiue *the* Senses, *if wee would disguise those* Things, *and labour to make them seeme more* Miraculous. *But wee doe hate all* Impostures, *and* Lies: *Insomuch as wee haue seuerely forbidden it to all our* Fellowes, *vnder paine of Ignominy and Fines, that they doe not shew any* Naturall worke *or* Thing, Adorned or Swelling; *but onely* Pure *as it is, and without all* Affectation *of* Strangenesse.

These are (*my Sonne*) *the Riches of* Salomons House.

For the seuerall Employments *and* Offices *of our* Fellowes; *Wee haue Twelue that Sayle into* Forraine Countries, *vnder the* Names *of other* Nations, (*for our owne wee conceale;*) *Who bring vs the* Bookes, *and* Abstracts, *and* Patternes *of* Experiments *of all other* Parts. *These wee call* Merchants *of* Light.

Wee haue Three that Collect *the* Experiments *which are in all* Bookes. *These wee call* Depredatours.

Wee haue Three that Collect *the* Experiments *of all* Mechanicall Arts; *And also of* Liberall Sciences; *And also of* Practises *which are not* Brought into Arts. *These we call* Mystery-Men.

Wee haue Three that try New Experiments, *such as themselues thinke good. These wee call* Pioners *or* Miners.

Wee haue Three that Drawe *the* Experiments *of the* Former Foure *into* Titles, *and* Tables, *to giue the better light, for the drawing of* Obseruations *and* Axiomes *out of them. These wee call* Compilers.

We haue Three that bend themselues, Looking *into the* Experiments *of their* Fellowes, *and cast about how to draw out of them* Things *of* Vse, *and* Practise *for* Mans life, *and* Knowledge, *as well for* Workes, *as for* Plaine Demonstration *of* Causes, Meanes *of* Naturall Diuinations, *and the easie and cleare* Discouery, *of the* Vertues *and* Parts *of* Bodies. *These wee call* Dowry-Men *or* Benefactours.

Then after diuerse Meetings *and* Consults *of our whole* Number, *to consider of the former* Labours *and* Collections, *wee haue Three that take care, out of them, to* Direct New Experiments, *of a Higher* Light, *more* Penetrating *into* Nature *then the* Former. *These wee call* Lamps.

Wee haue Three others that doe Execute *the* Experiments *so* Directed, *and* Report *them. These wee call* Inoculatours.

Lastly, wee haue Three that raise the former Discoueries *by* Experiments, *into* Greater Obseruations, Axiomes, *and* Aphorismes. *These wee call* Interpreters *of* Nature.

Wee haue also, as you must thinke, Nouices *and* Apprentices, *that the Succession of the former Employed Men doe not faile ; Besides, a great Number of* Seruants *and* Attendants, Men *and* Women. *And this we doe also : We haue* Consultations, *which of the* Inuentions *and* Experiences, *which wee haue discouered, shall be Published, and which not : And take all an* Oath *of* Secrecy, *for the Concealing of those which wee thinke fitt to keepe Secrett : Though some of those we doe reueale sometimes to the* State, *and some not.*

For our Ordinances *and* Rites : *Wee haue two very* Long, *and* Faire Galleries : *In one of these wee place* Patternes *and* Samples *of all manner of the more* Rare *and* Excellent Inuentions : *In the other wee place the* Statua's *of all* Principall Inuentours. *There wee haue the* Statua *of your* Columbus, *that discouered the* West-Indies : *Also the* Inuentour *of* Shipps : *Your* Monke *that was the* Inuentour *of* Ordnance, *and of* Gunpowder : *The* Inuentour *of* Musicke : *The* Inuentour *of* Letters : *The* Inuentour *of* Printing : *The* Inuentour *of* Obseruations *of* Astronomy : *The* Inuentour *of* Works *in* Mettall : *The* Inuentour *of* Glasse : *The* Inuentour *of* Silke *of the* Worme : *The* Inuentour *of* Wine : *The* Inuentour *of* Corne *and* Bread : *The* Inuentour *of* Sugars : *And all these, by more certaine Tradition, then you haue. Then haue we diuerse* Inuentours *of our* Owne, *of* Excellent Workes ; *Which since you haue not seene, it were too long to make* Descriptions *of them ; And besides, in the right Vnderstanding of those* Descriptions, *you might easily erre. For vpon euery* Inuention *of Valew, wee erect a* Statua *to the* Inuentour, *and giue* *him a Liberall and Honourable* Reward. *These* Statua's *are, some of* Brasse; *some of* Marble *and* Touchstone; *some of* Cedar *and other speciall* Woods *guilt and adorned; some of* Iron; *some of* Siluer; *some of* Gold.

Wee haue certaine Hymnes *and* Seruices, *which wee say dayly, of* Laud *and* Thanks *to* God, *for his Marueillous* Works: *And* Formes *of* Prayers, *imploring his* Aide *and* Blessing, *for the* Illumination *of our* Labours, *and the* Turning *of them into* Good *and* Holy Vses.

Lastly, wee haue Circuites *or* Visits, *of diuers* Principall Citties *of the* Kingdome; *wher, as it commeth to passe, we doe publish such New* Profitable Inuentions, *as weê thinke good. And wee doe also declare* Naturall Diuinations *of* Diseases, Plagues, Swarmes *of* Hurtfull Creatures, Scarcety, Tempests, Earthquakes, Great Inundations, Cometts, Temperature *of the* Yeare, *and diuerse other Things; And wee giue* Counsell *thereupon, what the* People *shall doe, for the* Preuention *and* Remedy *of them.*

And when Hee had sayd this, Hee stood vp: And I, as I had beene taught, kneeled downe, and He layd his Right Hand vpon my Head, and said; God *blesse thee, my Sonne; And* God *blesse this Relation, which I haue made. I giue thee leaue to Publish it, for the Good of other Nations; For wee here are in* Gods *Bosome, a Land vnknowne.* And so hee left mee; Hauing assigned a Valew of about two Thousand Duckets, for a Bounty to mee and my Fellowes. For they giue great Largesses, where they come, vpon all occasions.

The rest was not Perfected.

NOTES

PAGE **3**. 3. *the South Sea*: this name for the Pacific, in Spanish *Mar del Sur*, was originally given to that part of it south of the Central American isthmus, to distinguish it from the 'Northern Sea' (*Mar del Norte*) or Caribbean Sea on the other side.

4. *good Windes from the East*: the trade wind, which blows steadily from the coast of Peru across the Pacific through a great part of the year. Steering W.N.W. towards Japan, the ship would cross the tropic of Cancer in the W. Pacific, and then probably encounter the anti-trade, which might well delay her progress for months. On the approach of the hot season she would be in danger of being blown towards Kamtchatka by the violent and fitful S.E. monsoon. The supposition that these contrary winds might delay the ship nearly seven months is not so absurd as has been supposed.

7. *so as*: so that.

12. *made good spare of them*: economized them. A phrase common in the early seventeenth century.

17. *sheweth his Wonders in the Deepe*: cf. Psalm cvii. 23, 24.

19. *He discouered the Face of the Deepe . . . discouer Land to vs*: 'discover' is here used in two obsolete senses, viz. (1) 'remove' (as a covering), (2) 'uncover', 'disclose'. Bacon refers to Gen. i. 9: 'God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear.' Cf. the Latin version: 'Quemadmodum in principio congregationes aquarum mandavit, et aridam apparere fecerat, ita tunc quoque terram nobis ostenderet.'

21. *mought*: this form of the past tense of *may*, representing a late OE. *muhte*, though now confined to dialects and vulgar American-English, was very common in the sixteenth and seventeenth centuries.

23. *a Kenning*: obs. for 'ken', 'sight'; hence, as a nautical term, the distance within the range of vision; a measure of length, arbitrarily considered equal to about twenty or twenty-one miles.

26. *might*: could.

PAGE **4**. 3. *Boscage*: bushes, thickets; an Old Fr. word, Mod. Fr. *bocage*.

9. *offred to land*: showed an intention of landing.

10. *Bastons*: the older form of *batons*, 'truncheons'. O. Fr. *baston*, mod. *bâton*.

17. *wherof One of them*: redundant for 'whereof one', or 'one of whom'.

Tipstaffe: a staff of office with a metal tip, formerly borne in England by sheriffs' officers, and by criers or ushers in courts of justice. The word was commonly transferred to these officials themselves.

18. *tipped . . . with Blew*: blue seems to be the national colour of Bensalem. It is worn by officials (**5.** 27, **10.** 29, **34.** 3, 7). The chariot and horses of the father of Salomon's house, and the canopy under which he sits, are adorned with the same colour (**33.** 34, **34.** 16, **35.** 6).

23. *Writing Tables*: tablets, consisting of two or more leaves, generally of ivory, in book form, for memoranda. So Luke i. 63.

27. *Latine of the Schoole*: scholastic Latin, such as was used in the Universities.

28. *Land yee not . . . except you haue*: in colloquial speech *you*, properly the objective case, was beginning to replace *ye*, on the analogy of *thou*.

PAGE **5.** 12. *then*: *than* is a differentiated form of *then* (Old Engl. *ðanne*, *ðænne*). The use with comparatives arose from such a construction as 'This is better, then that'.

18. *chargeable*: burdensome, an expense.

19. *Pistoletts*: certain Spanish and Italian gold coins, worth from 5*s.* 10*d.* to 6*s.* 8*d.*, were thus called in France and England. The connexion with Fr. *pistolet*, a small dagger, also a pistol, is obscure.

21. *nor would scarce looke*: 'scarce' having a quasi-negative force, this phrase would now be a vulgarism, but the old double negative was still admissible in Elizabethan English. Cf. **4.** 28, 'Land yee not, none of you', **9.** 1 'Lett it not trouble you, nor doe not think'.

27. *Water Chamolett*: watered camlet (i.e. camlet marked with irregular wavy reflections produced by moistening and pressing), in French *camelot à ondes*. *Chamelot* was an early French form of the word, which either is the Arabic *khamlat*, 'nap or pile of cloth', or is explained by the supposed use of camel's hair in its manufacture. The name was originally applied to a costly fabric of Oriental origin, afterwards to various thin materials used for cloaks, &c. Spenser describes the nymph of the Medway as 'clad in a vesture . . . wav'd upon, like water chamelot' (*Faerie Queene*, IV. xi. 45). Cf. also Holland's *Pliny* (1601), i. 228: 'The waued water Chamelot, was from the beginning esteemed the richest and brauest wearing' (*N. E. D.*).

PAGE **6.** 1. *Flightshott*: the distance to which a flight-arrow could be shot. This was a light, well-feathered arrow for shooting long distances. A good flight-shot was 280 yards or more. Cf. Shakespeare, *2 Henry IV*, III. ii.

13. *lift*: an obsolete form of the past tense.

16. *sweare . . . that yee are no Pirates*: with this naïve demand compare *Odyssey* iii. 71–4, where Nestor asks Telemachus whether he is a trader or a pirate. In the days of Drake and Raleigh piracy was less disreputable than it is now.

17. *shed bloud, lawfully . . .*: this was considered to carry a ceremonial pollution (Moore Smith).

22. *Act*: fact, i. e. that we were ready to swear.

27. *for that*: because.

PAGE **7**. 19. *preuented*: anticipated.

because: with the purpose that, in order that. This sense is still common in dialects, though hardly in literary use after the middle of the seventeenth century.

PAGE **8**. 5. *Cambrick oyl'd*: when glass was an expensive luxury, as in the Middle Ages, this was a common substitute for it, but it is strange to find it used by a nation which has made such technical progress.

13. *cast it*: reckoned. Cf. the phrase 'to cast up accounts'.

19. *ciuilly*: soberly, without ostentation.

20. *Dorture*: an obsolete term for a dormitory, also spelt *dortour*, *dorter*, &c. Old Fr. *dortoir*, *dortour*.

31. *when they giue any Charge or Commaund*: i. e. when they deliver a charge given by their superiors; in the Latin version '*quoties ministri mandata superiorum referunt*'.

PAGE **10**. 5. *Confusion of face*: shame; a biblical phrase, as in Ezra ix. 7.

21. *in expectation what would be done*: expecting (waiting to see) what, &c.

25. *some Diuine Poole of Healing*: an allusion to the pool of Bethesda, John v. 2–4. Latin, 'velut in Probaticam aliquam'. *Probatica* is the name of this pool in the Vulgate (Greek 'sheep-pool').

kindely: naturally, readily, in accordance with 'kind' or nature. The adverb is hardly found now in this sense, except in dialects, and the colloquial phrase 'to take kindly' to a thing.

PAGE **11**. 2. *auoyded*: quitted, an obsolete use.

14. *aforehand*: provided for, supplied in advance.

17. *defray you*: pay your expenses. No longer used with a personal object.

PAGE **12**. 3. *our Tongues should first cleaue to the Roofes of our Mouthes*: a biblical phrase; cf. Psalm cxxxvii. 6.

7. *by as iust a Right, as euer Men . . . were bounden*: for this ellipsis of the preposition cf. p. 34, 'Ther was neuer any Army had their Men stand in better Battell-Array, then the People stood'.

17. *preuent vs*: anticipate our needs. For this use cf. the

collect, ‘Prevent us, O Lord, in all our doings with thy most gracious favour’.

25. *Bensalem*: in Hebrew ‘sons of peace’. For the supposed kinship of the inhabitants with the Jews, see p. 31.

32. *for the Entertainement of the time*: so as to spend the time (to advantage).

PAGE **13**. 7. *in respect that Land was so remote*: considering that . . . , since . . . . Cf. Shakesp., *As You Like It*, II. ii. 14: ‘In respect that it is a shepherd’s life, it is naught.’

19. *within Night*: an unusual expression; in the Latin version ‘*noctu*’.

20. *some mile*: about a mile.

a great Pillar of Light . . . : miracles related in the legends of the saints are very often accompanied by such appearances.

32. *as in a Theater*: in a semicircle, like the spectators in a theatre.

34. *the Society of Salomon’s House*: see p. 35.

PAGE **14**. 9. *discerne*: distinguish.

14. *thy Finger*: cf. Exodus viii. 19: ‘The magicians said unto Pharaoh, This [the plague of lice] is the finger of God.’

17. *the Lawes of Nature are thine owne Lawes*: the *New Engl. Dict.* records no instance of the use of the word *law* in the scientific sense of an invariable sequence between conditions and phenomena, earlier than the first volume of *Philosophical Transactions*, the organ of the Royal Society, 1665, p. 31: ‘The changes be varied according to very odd laws.’ The present passage shows how this use of the word arose. The regularity of all physical processes, a truth hardly divined before the Renascence, was thought of as the expression of Divine ordinances. Cf. Psalm cxlviii. 6: ‘He hath given them [sun, moon, &c.] a law which shall not be broken.’ It may be noted that to Bacon natural laws are not absolutely inviolable. ‘Thou exceedest them not but upon great cause’, i. e. a miracle is the suspension of a law of nature, not the operation of a higher law.

PAGE **15**. 3. *Sindons of Linnen*: the *sindon* (Greek σινδών) of the ancients was a very fine cotton fabric from India (Sind). Later, the name was given to fine, thin linen, or, as here, to a wrapper made of it. Cf. p. 33, ‘a Sindon or Tippett’.

4. *the Canonicall Bookes . . . as you haue them*: these are the books which form the canon (κανών) or ‘rule’ of faith, i. e. the Bible, as distinguished from various apocryphal books. The Old Testament canon, probably complete *c.* 100 B. C., is said to have been formally ratified by the Jewish Council of Jamnia in A. D. 90. The question of the Jewish apocrypha was left undecided by the Christian Church until the sixteenth century, when the reformed churches denied the canonical authority of these books, and the Church of Rome replied by pronouncing them canonical (except 1 and 2 Esdras and the Prayer of Manasses) at the Council of Trent in 1546.

The New Testament canon was gradually fixed. It is already found, with a few exceptions, in the list preserved in the Muratorian fragment, *c.* A. D. 200. The present canon, drawn up by St. Athanasius in the fourth century, was not accepted by the whole Church till 692.

8. *Bookes of the New Testament, which were not at that time written* : at the supposed date of this event, 'about twenty years after the Ascension', i. e. *c.* A. D. 49, hardly any, perhaps none, of the books of the New Testament were written. No one, however, knew this in Bacon's day. 1 Thessalonians, probably the earliest book, may be dated *c.* 48–53.

20. *Conforme to* : conformable or similar to ; the adj. is now obsolete or very rare. For the miracle cf. Acts ii. 1–11.

23. *redd vpon the Booke* : an obsolete construction, common in Mid. Engl.

25. *Infidelity* : heathenism.

26. *Remaine* : formerly common for 'remains', 'remnant'.

28. *Bartholomew* : it was an early belief that the twelve Apostles preached the Gospel to the principal nations of the world. St. Bartholomew is said to have preached in India, a vague term which included the islands lying off the south-eastern coasts of Asia, and might well be applied to the land of Bensalem. Eusebius (*Hist. Eccl.* v. 10) records a tradition that St. Bartholomew left a copy of the Gospel according to St. Matthew with the Indians.

PAGE **16**. 14. *Hardines* : hardihood, boldness.

24. *neuer heard any of the least Inkling or Glimse* : the words 'of any' have probably been carelessly transposed.

26. *Enterknowledge* : mutual or reciprocal knowledge. Cf. the obsolete verb *enterknow* or *interknow*.

31. *both wayes suffice to make a mutuall Knowledge . . . on both parts* : this obscure and tautologous sentence means that two nations can gain some knowledge of each other, partly through travel, and partly through hearing the reports of travellers.

PAGE **17**. 3. *Conclaue* : a figurative use of the word in its original and obsolete sense, 'a place that may be locked up, a private room, closet', from Lat. *conclave*. Cf. John Evelyn, *Sylva* (1664), ed. 1776, p. 147 : 'At the first peeping out of the Winter Conclave.'

8. *Proprietie* : property.

21. *tender . . . to aske* : sensitive about asking.

23. *Touch* : hint.

30. *that which* : perhaps a Latinism (*id quod*), Moore Smith.

31. *about three thousand Yeares agoe . . .* : there is no foundation for this belief. It is true that there was a great decline in the art of navigation during the first nine centuries of the Christian era, until it was revived by the Arabs and Norsemen. At the Revival of Learning there was a strong tendency to over-estimate

the technical achievements of the ancients. Bacon often expresses the belief that the civilization of very early times was superior to that of later ages.

35. *within these sixescore Yeares*: if the visit to Bensalem be supposed to have taken place in the opening years of the seventeenth century, the hundred and twenty years preceding it witnessed a series of voyages of discovery of greater importance than all which had been made before. The doubling of the Cape of Good Hope by Bartholomeu Diaz in 1486 was followed in 1497-9 by the voyage of Vasco da Gama to Calicut and back, which opened up the sea route to India and the Far East. In 1492-3 Columbus made his first voyage to America, and in 1496-7 Cabot sailed to Newfoundland. In 1500 Pinzon discovered Brazil. In 1520-1 Magalhães crossed the Pacific, his ship being the first to sail round the globe. Jacques Cartier sailed up the St. Lawrence in 1540. By the end of the century European vessels, mainly Portuguese and Spanish, traded with most of the maritime countries of the world, Australasia being the chief exception.

PAGE **18**. 5. *what it was*: whatever was the cause.

The Phœniceans . . . had great Fleetes: the Phoenicians, a Semitic people, were the great traders and navigators of antiquity. Their ships appeared in Greek waters from about the twelfth century B.C., and during the following six hundred years they were masters of the Mediterranean, forming settlements on the south coast and the islands, as well as in Spain. Passing the Straits of Gibraltar, they sailed north as far at least as the Scilly Islands, which they visited for tin. They also navigated the Red Sea and the Indian Ocean. Tyre, which became the predominant Phoenician city, traded with Ophir, perhaps a region in S. or E. Arabia, and Tyrian seamen were employed by Solomon to import Indian products, either direct from India or, more probably, from an emporium on the Arabian coast (1 Kings ix. 26-8: x. 11, 22). The traffic of Tyre is described in Ezekiel xxvii.

7. *the Carthaginians their Colony*: the Tyrians are said to have founded Carthage in 813 B.C. The neighbouring colony of Utica was several centuries older. A Carthaginian named Hanno explored the west coast of Africa, apparently as far as the coast of Guinea, at an uncertain date, perhaps about 500 B.C. His contemporary Himilco seems to have reached the English Channel.

8. *the Shipping of Egypt*: the ancient Egyptians were not great navigators, though from very early times their fleets sailed down the Red Sea to Somaliland, or Punt, whence they brought frankincense, myrrh, and other precious cargoes. Herodotus (iv. 42) relates that Pharaoh Necho (*c.* 600 B.C.) sent some ships, manned by Phoenicians, on a voyage of discovery. Sailing down the Red Sea, they circumnavigated Africa, and returned

through the Pillars of Hercules. The statement that as they sailed west they had the sun on their right hand, though thought by Herodotus to be a fiction, really corroborates the story.

Palestina : we have no accounts of Hebrew voyages, except those undertaken by Solomon (see above, note to **18.** 5). Jehoshaphat of Judah and Ahaziah of Israel built ships in the Gulf of Akaba with the object of trading with Arabia, but the enterprise was frustrated by a storm (1 Kings xxii. 48 ; 2 Chron. xx. 35–7).

9. *China*: nothing is known of the navigation of the high seas by the Chinese before the reign of the great emperor Shi Hwang-ti, 220-210 B.C. From that time they gradually extended their voyages until about A. D. 450 Chinese junks ascended the Euphrates to Hira. Later they are said to have visited the Red Sea ports.

the great Atlantis : see Introduction, pp. xxi ff.

10. *Iunks* : although Bacon speaks slightingly of these vessels, there were among them in the later Middle Ages some of the largest ships afloat. Some of those which regularly visited Calicut are said to have carried a thousand persons.

11. *Canoa's* : even the most advanced native races of America made little progress in navigation, and never attained the skill of the Polynesians or Malays.

13. *content*: tonnage.

20. *Arabians* : although three thousand years before Bacon's time, which is the period described, the Arabs were probably 'no sailors', they developed an extraordinary maritime activity towards the close of the Middle Ages, and by about 1500 had most of the trade in Asiatic waters in their hands, from the Red Sea to Japan.

22. *Stirps* : the obsolete word *stirp* (Lat. *stirps*) means a stock, race, family.

24. *the Pillars of Hercules* : the old name for the Straits of Gibraltar (Ἡρακλέους στῆλαι, *Herculis columnae*). The name seems to have been applied originally to the Rock of Gibraltar and the corresponding hill on the African coast near Ceuta.

26. *Paguin*, (*which is the same with Cambaline*) : Peking, which, however, was never a sea-port. Kublai Khan, the great Mongol emperor, rebuilt Peking in 1284, and it received the Mongolian designation of Khanbalik, i.e. 'city of the Khan'. This name was spelt Cambaluc by Marco Polo, but commonly corrupted by subsequent writers into Cambalu. Bacon's Cambaline seems to be a further corruption, perhaps a misreading of his MS. The Latin version has 'Paguinum (civitatem in China antiquissimam) quae eadem est cum Cambalu'.

27. *Quinzy*: the great Chinese city now known as Hangchow, the capital of Cheh-kiang. Marco Polo, who describes its splendour in glowing colours in his twenty-first chapter, calls it Kinsai, which his translator Ramusio alters to Quinsai.

These words represent the Chinese name King-sze, i. e. 'capital'. It was the capital of the empire of Southern China under the Sung dynasty from 1138 to 1272. Situated at the southern terminus of the Grand Canal, in the most productive part of China, it has long been a great commercial centre, and is now a treaty port.

the Borders of the East Tartary: the eastern coast of Asia, north of China.

30. *the great Atlantis*: see Introduction, pp. xxi ff.

31. *the Narration and Description . . .*: the clause 'that the descendants of Neptune planted there' depends on 'narration', and the words 'of the magnificent temple', &c., depend on 'description'.

Bacon refers to Plato's fragmentary dialogue *Critias*, for which see Introduction, p. xxiii.

32. *planted*: settled, founded a colony.

PAGE **19**. 1. *Degrees*: steps.

3. *Scala Cœli*: a ladder of heaven, like Jacob's ladder. Prof. Moore Smith refers to the Church of S. Maria Scala Coeli, near Rome, on the site of which St. Bernard is said to have seen in a vision a ladder on which the souls whom his prayers had redeemed from Purgatory mounted to heaven. The church was greatly venerated in England before the Reformation.

4. *the said Country of Atlantis; As well that of Peru . . . as that of Mexico . . . were mighty . . . Kingdomes*: this ungrammatical sentence appears to mean 'the countries of Peru and Mexico, which were parts of Atlantis, were', &c. The Latin version is similar. Bacon is quite serious in identifying Atlantis with America, as in much of the speculation that follows (cf. the quotation from Essay lviii in the note to **19**. 33). The identity of the two countries was held by many of Bacon's predecessors and contemporaries, e. g. by Francisco Lopes de Gomara in his *Istoria de las Indias*, 1552, transl. by R. Eden in 1555 (Moore Smith, p. xix); by Joseph de Acosta, *Natural and Moral History of the Indies*, Engl. transl., 1604, p. 40 f.; by Sir Humphrey Gilbert (Hakluyt, ed. 1904, vii. 160–2); and by Hakluyt (Ep. Ded. to vol. iii of *Voyages*, in ed. 1903, i. lxxv).

5. *Peru then called Coya*: Peru never bore the name Coya, which was the designation for the queen or chief wife of an Inca sovereign. It occurs in Acosta's *Hist. of the Indies*, Engl. transl., 1604, p. 455. Bacon may have confused the word with Colla, the name of a civilized nation which flourished before the rise of the Incas, and was overthrown by them. It has left a memory of itself in certain monumental buildings near Lake Titicaca.

Mexico then named Tyrambel: the latter name appears to be fictitious. The Aztec empire of Mexico, which arose in the fifteenth century, was preceded by the domination of other and in some respects more advanced races, such as the Toltecs in Mexico proper, and the Mayas who flourished in Guatemala and Yucatan in the eighth and ninth centuries. The refinement which the Mayas reached at this time presupposes a few centuries of development from savagery, but there is no evidence in any part of America for the extremely ancient culture which Bacon here imagines.

8. *they both made two . . . Expeditions*: a strangely irregular construction. The meaning is, 'they each made an expedition'.

9. *They of Tirambel . . .*: the account of the expedition from Atlantis to Europe, and of the disasters which ensued, is drawn from Plato's *Timaeus*. See the quotation in the Introduction, p. xxii f.

18. *Neither had the other Voyage . . . had*: neither would . . . have had.

25. *entoyled*: caught in his toils, entrapped. The word is used by Keats and Browning.

30. *the Diuine Reuenge*: the Nemesis of the Greeks.

33. *Not by a great Earthquake*: Bacon here diverges from the tradition followed by Plato, because he wishes to identify the great Atlantis with America, and he supposes, quite erroneously, that the latter is little subject to earthquakes. The Pacific coast and the countries round the Gulf of Mexico have often been devastated by violent earthquakes. Joseph de Acosta's *Natural and Moral History of the Indies*, a book often quoted by Bacon, contains a chapter (Bk. iii, ch. 26) on the subject, with many instances (Engl. transl., 1604, pp. 197-201).

The opinions expressed in this and the following sentences are closely paralleled in Bacon's fifty-eighth Essay, 'Of Vicissitude in Things', which first appeared in the edition of 1625, and was probably written about the same time as *New Atlantis*. He writes: 'The great winding-sheets that bury all things in oblivion are two; deluges and earthquakes. . . . The remnant of people which happen to be reserved are commonly ignorant and mountainous people, that can give no account of the time past; so that the oblivion is all one as if none had been left. If you consider well of the people of the West Indies, it is very probable that they are a newer or a younger people than the people of the old world; and it is much more likely that the destruction that hath heretofore been there was not by earthquakes (as the Egyptian priest told Solon, concerning the island of Atlantis, *that it was swallowed by an earthquake*), but rather that it was desolated by a particular deluge; for earthquakes are seldom in those parts. But on the other side, they have such pouring rivers as the rivers of Asia and Africa and Europe are but brooks to them. Their Andes likewise, or mountains, are far higher than those with us; whereby it seems that the remnants of generation of men were in such a particular deluge saved.'

The source of these rather crude and fanciful speculations is to be found in the words of the Egyptian priest in *Timaeus*,

p. 22 f., quoted in the Introduction, p. xxii. As S. H. Reynolds points out in his edition of the *Essays*, Machiavelli has the same idea, taken no doubt from the same source, in his *Discourses on Livy*, Bk. ii, ch. 5, in Dacre's translation: 'How the remembrances of times by several occasions were abolished. . . . As for the causes that proceed from heaven, they are such as extinguish the race of mankind, and reduce to a small number the inhabitants of part of the world; and this comes to pass either by pestilence or famine or by a deluge of waters; but that of most importance is this last, because it is more universal, and because those that escape are all such as live among the mountains, and are simple and ignorant people who having no knowledge of antiquity cannot derive it to their posterity.'

It was natural that Bacon should apply these ideas to the case of America, especially in view of such statements as the following, which occurs in Joseph de Acosta's *Hist. Ind.*, Bk. i, ch. 25: 'The Indians [of America] make great mention of a deluge hapned in their countrie. . . . I am of their opinion which thinke that these markes and shewes of a deluge was not that of Noe, but some other particular, as that which Plato speaks of, or Deucalion's flood.'

PAGE **20**. 2. *greater Riuers.* The Mississippi and the Amazon are the two longest rivers in the world, and the latter drains the largest area. Both are subject to very destructive floods. Cf. J. de Acosta, *Hist. Indies*, Engl. transl., pp. 91 ff.

higher Mountaines: Aconcagua (23,393 ft.), the highest mountain in the Andes, is exceeded by several peaks of the Himalayas, and possibly of the Tian-shan range in Central Asia.

14. *So as*: wherefore.

16. *account your Inhabitants of America as a young People*: this idea appears to be suggested by the saying of the Egyptian priest in Plato's *Timaeus*, 22 B, that the Greeks are a young people, because they have lost their ancient civilization, and even the memory of it, through earthquake and flood; unlike the Egyptians who have escaped such disasters.

The discovery of America aroused much speculation as to the origin of the natives, and of their arts and customs. Europe was confronted on the one hand with the unfamiliar spectacle of purely savage communities (cf. Montaigne's essay on the Cannibals and Shakespeare's Caliban), and on the other hand with the elaborate and decaying civilizations of Mexico and Peru, with their traditions of ancient and vanished races. Bacon, as we know from other writings of his, was keenly interested in the subject, and considered that the arts of America had been invented independently.

It is by no means certain that America was peopled much later than the rest of the world.

17. *a thousand yeares, at the least*: fantastic as Bacon's

chronology seems, it is not without method. The great naval expeditions from Tyrambel and Coya took place when navigation flourished, ‘three thousand years ago, or somewhat more’, i.e. *c.* 1400 B.C. The Great Atlantis was destroyed less than a century later, i.e. *c.* 1310 B.C. This was at least a thousand years after the Deluge, which therefore took place not very long before 2310 B.C. This agrees closely with the shorter biblical chronology, based on the Hebrew text, which dates the Deluge 2349 B.C.

23. *Noah and his Sonnes, which was the chiefe Family*: as often in Elizabethan English, the copula agrees in number with the predicate, when the latter is more emphatic than the subject.

25. *Ciuillity*: civilization.

27. *in respect of*: by reason of, on account of.

28. *Tygers . . . great Hairy Goates*: although neither of these animals is a native of America, it is not likely that Bacon mentioned them at random. By the tiger he probably means the jaguar, which, however, is more like a large leopard. Acosta calls it a tiger, Engl. transl., p. 303. Under the term ‘goats’ Bacon probably refers to the alpaca and vicugna, goat-like animals of the camel family, the hair of which has long been used by the Peruvians for weaving. Acosta, who describes the vicugna (pp. 316 ff.), says that it is greater than a goat, and that the Indians make coverings and rugs of its fleece. He denies that it is a true goat.

34. *delight, in the Feathers of Birds*: the use of feathers for personal adornment is characteristic of many North American peoples. The exquisite embroideries of the Mexicans, composed of the feathers of parrots, humming-birds, &c., excited the admiration of the Spaniards.

PAGE **21.** 1. *inuited vnto it*: led to adopt the custom.

3. *by this maine Accident of Time*: through this greatest catastrophe in history. The Latin version has ‘*per casum hunc majorem, et temporis quasi miraculum*’.

5. *with whom, of all others*: cf. below, l. 26, ‘a King, whose memory of all others we most adore’. This construction is due to confusion between ‘with whom, of all, we had most commerce’, and ‘with whom, above all others, we had’, &c. Cf. Shakesp., *M. N. D.* V. i. 252: ‘This is the greatest error of all the rest’; *Macbeth* V. viii. 4: ‘Of all men else I have avoided thee.’

11. *brooke*: endure, in the Latin version ‘*tolerare*’. Cf. p. 44, ‘Boates for . . . Brooking of Seas’.

13. *from other Nations, to Sayle to vs*: we should now say ‘from other nations sailing’. Bacon often uses the infinitive where a gerundial construction is now preferred. Cf. below, l. 31, ‘bent to make’ = ‘bent on making’.

17. *mought*: see note to **3.** 21.

18. *I cannot say . . . but our Shipping . . .*: to tell the truth,

I cannot deny that our shipping.... Latin '*neque enim denegare possum (si verum fateri cupiam)* ...'.

30. *inscrutable for good*: the goodness of which could not be searched out, or fathomed. Bacon refers to Prov. xxv. 3: 'the heart of kings is unsearchable'; in the Vulgate '*cor regum inscrutabile*'. Cf. his 'humble submission' to the Lords (April 22, 1621), 'a King ... whose heart is inscrutable for wisdom and goodness' (Moore Smith).

33. *substantiue*: independent, self-supporting.

PAGE **22**. 2. *set on worke*: the preposition 'on' had much more extended functions in Elizabethan than in modern English, being often used where 'to', 'of', 'at', 'in', &c., would now be employed. See Abbott, *Shaks. Gram.*, §§ 180 ff. The contracted form (set a-work) was frequent. Cf. 'set . . . on going', p. 37.

3. *Transportations from Port to Port*: coastwise traffic.

11. *to giue perpetuitie*: it will be observed that the legal code given to Bensalem by its great lawgiver continued in force, even in minute details, for 1,900 years. This implies a static conception of society, characteristic of antiquity and the Renascence. It was assumed that if perfect laws were enacted, they need never be altered, the inevitable changes, which are a condition of social health, being ignored. Thus Zaleucus and Charondas, who gave laws to Locri and Catana in the seventh century B.C., are said to have brought legislation almost to a standstill for centuries, by enacting that whoever proposed a new law and failed to carry it should suffer death.

17. *Doubting*: suspecting, fearing.

19. *an Ancient Law, in ... China*: the Chinese Government from a very early period sought to restrict foreign settlement. This policy was abandoned by the Mongol emperors (1232-1368), but revived by the native Ming dynasty. After Bacon's time the Manchu dynasty confined foreign trade to the ports of Canton and Macao. It was forced to open the so-called 'treaty ports' in 1842 and later.

20. *yet*: still.

21. *a curious, ignorant, fearefull, foolish Nation*: although China has been considerably influenced in different ages by India, Central Asia, and Europe, yet the policy of discouraging foreign intercourse, which has generally prevailed, has tended to arrest the development of Chinese civilization, and make it seem in some aspects ridiculous to the foreign observer. By calling the Chinese 'curious' (Latin '*curiosam*'), Bacon seems to mean that the lack of opportunity of studying foreign customs has made them unduly inquisitive, which is hardly the case. They are 'fearful' in so far as that is implied in being singularly unwarlike. In Bacon's day the decay of Chinese society was far advanced, and the nation was threatened by the rising military power of the Manchus, who were soon to conquer it.

32. *Estate*: state, body politic; a rare and obsolete use, found elsewhere in Bacon. Cf. *Advancement of Learning*, I. vii. 3: 'commonwealths and popular estates.'

PAGE **23**. 4. *seuerall*: different.

5. *Bottomes*: hulls, ships.

10. *Chineses*: for this older form of the plural cf. Milton, *P. L.* iii. 438.

20. *preheminence*: thus spelt from the fifteenth to the eighteenth century to avoid hiatus.

26. *Creatures*: the word included inanimate as well as animate things.

28. *So as*: wherefore, as **20**. 14.

denominate of: named after. The word is formed directly from the Latin participle *denominatus*. As a rule these participial adjectives (which are often obsolete, e.g. 'devote', 'create') are older than the verbs of the same form.

31. *that Naturall History*: cf. 1 Kings iv. 33: 'He spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall: he spake also of beasts, and of fowl, and of creeping things, and of fishes.'

32. *Libanus*: the Latin form of the Hebrew Lebanon.

33. *Mosse*: the word rendered *hyssop*, a plant unknown in Palestine, denotes some unknown herb, evidently very small. Quoting the passage in *Sylva Sylvarum*, § 536, Bacon again uses the word 'moss', and adds 'for so the best translations have it'.

35. *Symbolize . . . with*: correspond to, agree with; in the Latin version '*consentire*'. Cf. Bacon, *Sylva Sylvarum*, § 327: 'silver . . . is the metal that in nature symbolizeth most with gold.'

The account of Solamona perhaps alludes to James I, who was called by his flatterers the British Solomon, on account of his learning and pacific policy. Bacon himself repeatedly compares him with the Hebrew king. Cf. e.g. the dedication to his *Advancement of Learning*, § 2. But when he wrote *New Atlantis*, shortly before James's death, his appeals for royal patronage of organized research had for some twenty years fallen on deaf ears, and he can hardly have hoped for help from a king who seems never to have shown the slightest interest in his writings, and had scoffed at the *Novum Organum*.

PAGE **24**. 19. *seuerall*: different, as **23**. 4.

either: each.

24. *Inuentions*: including discoveries.

33. *contained*: prevented, properly, held back, restrained. Cf. Bacon's essay 'Of Anger': 'to contain anger from mischief.' We still say that a person 'cannot contain himself' for rage.

PAGE **25**. 1. *colour themselues*: disguise themselves. The subst. is still used in the sense of disguise. The Latin version has '*sub nomine . . . lateant*'.

5. *Practique*: an obsolete word equivalent to 'practice' which has replaced it. Old Fr. *practique*, mod. *pratique*.

9. *Gods first Creature*: cf. Genesis i. 3: 'God said, Let there be light, and there was light.' Cf. Bacon's first Essay 'Of Truth': 'The first creature of God, in the works of the days, was the light of the sense: the last was the light of the reason.'

10. *To haue Light... of the Growth of all Parts of the World*: not 'to obtain information about the progress of all parts', but, as Spedding explains it, 'in whatever parts of the world it is to be found'. Cf. *Burton's Diary*, 1657, i. 325, 'wine not of the growth of Spain' (*N. E. D.*). 'Light', which is a characteristic Baconian term for knowledge, is here regarded as a merchandise, of which different countries produce special varieties. On p. 45 the Fellows of Solomon's House who bring 'books and abstracts, and patterns of experiments' from foreign countries are called 'Merchants of Light'. The Latin version has '*luce, inquam, in quacunque tandem terrae regione prorumpente et germinante*'.

13. *probably*: plausibly, convincingly.

15. *tooke vs off*: relieved our embarrassment.

23. *when it came once*: as soon as the news spread.

25. *vsed*: had the custom.

27. *presently*: instantly.

34. *Tedder*: tether; late Middle Eng. *tedir*. In many words in which *d* was preceded by a vowel and followed by *-er*, *-ir*, *d* was changed into *th* in early Modern Eng. So *fader*, *moder*, *hider*, *togedere*, &c.

PAGE **26**. 23. *Consultation*: this resembles the Roman *consilium domesticum* or family council, a legal institution for determining family disputes or other difficulties, which has been perpetuated by the French Civil Code.

PAGE **27**. 8. *Halfe-Pace*: a raised floor or platform, especially in a hall, a dais. The word is still occasionally used for the platform on which an altar stands. It is derived from the French *hau(l)t pas*, 'high step', earlier forms of the English word being *haultpace*, *halpace*. The Latin version has '*gradum unicum ascensus*'.

11. *State*: canopy, in the Latin version '*conopeum*'. An abbreviation of 'cloth of state', or some such phrase. Cf. Milton, *P. L.* x. 445 ff.:

> Ascended his high throne, which, under state
> Of richest texture spread, at the upper end
> Was placed in regal lustre.

12. *Iuy*: probably chosen as an evergreen, and so symbolizing a 'green old age'.

13. *Aspe*: now more commonly called the aspen, a species of poplar. The form *aspen* was originally the corresponding adjective.

16. *broyding*: *broid* is an obsolete form of the verb *braid* (Old Eng. *bregdan*), to intertwine, plait. Cf. *embroidery*.

19. *true Iuy*: apparently 'natural ivy', contrasting with the artistic decoration of the 'state'. Cf. *Faerie Queene*, II. xii. 61.

24. *if there be a Mother* . . .: it is strange that she has no public place in the ceremony, especially as her female descendants appear on the dais.

25. *Trauerse*: 'a small compartment shut off or enclosed by a curtain or screen in a church, house, &c.; a closet', *N. E. D.*; in this case apparently a kind of gallery running across part of the end of the hall. The Latin version, which renders the passage '*collocatur ad dextrum latus cathedrae orchestra quaedam cooperta cum ostio secreto et fenestris*', shows that it was similar to the minstrels' gallery in a dining-hall.

placed in a Loft aboue: if the traverse is itself a room, this may mean 'on the first floor', the hall being often double the height of the other rooms.

27. *a carued Window of Glasse, leaded with Gold and blew*: a window with carved tracery, and leaded lights, with golden and blue glass.

32. *Returne*: in architecture, a part receding from the line of the front, hence one of the sides of the dais.

PAGE **28**. 3. *on either side of him two young Lads*: with this incorrect expression compare **19**. 8: 'they both made two great Expeditions.'

8. *streamed with Gold*: probably 'adorned with gold stripes', perhaps wavy lines. Johnson's *Dict.*, quoting this passage, defines the verb, 'to mark with colours or embroidery in long tracks'. The Latin version reads '*radios habet aureos*'.

9. *Curtesies*: the word *curtsy*, shortened form of *courtesy*, was formerly applied to salutations given by men as well as women. Cf. Shakespeare, *Much Ado*, II. i. 57: 'Let him be a handsome fellow, or else make another curtsy.'

21. *expedited of Course*: issued as a matter of course. This is the earliest instance recorded in the *N. E. D.* of *expedite* in the now rare sense of 'issue (a document) officially'.

29. *thus much*: as much as this, as much as to say.

PAGE **29**. 9. *Ensigne*: token, badge.

11. *After this Ceremony ended*: a Latinism.

15. *except he hap*: unless any one of them happens. The ungrammatical change of number is determined by the sense.

25. *Inuention*: as a term in rhetoric, the inventive or imaginative faculty.

29. *the Father of the Faithfull*: cf. Rom. iv. 11; Gal. iii. 7.

31. *in whose Birth, the Births of all are onely Blessed*: i. e. 'in the birth of whom alone the births of all are blessed'. The position of the adverb in the sentence was still somewhat undetermined.

Page **30.** 12. *make the dayes of thy Pilgrimage, good, and many*: a biblical phrase; cf. Genesis xlvii. 9.

13. *euery of them*: this pronominal use of *every* is now only found in the law phrase 'all and every'.

19. *either*: each of the two, the original sense of the word, in Old Eng. *æghwæðer*, *ægðer*. The usual disjunctive sense 'one or the other of two' is due to confusion with Old Eng. *áhwæðer*, Mid. Eng. *ouðer*, *oðer*, whence *or*.

26. *straight*: close. More properly *strait*, from Old Fr. *estreit*, Mod. Fr. *étroit*, from Latin *strict-us*; a distinct word from *straight*, properly the past participle of *stretch*.

28. *they*: the latter.

Page **31.** 2. *Surely*: indeed.

5. *the Seraphims, which guard his Throane*: a class of winged beings, which in Isaiah's vision (ch. vi) surround the throne of the Lord. They are regarded by some Christian writers as forming one of the nine orders of the celestial hierarchy. The double plural 'seraphims' is also found in Isaiah vi. 2.

6. *the Milken Way*: *milken* is a rare adjective, now practically obsolete. The Milky Way has been imagined by some primitive peoples as the path of the dead. Christ is probably here thus entitled as the Way to Heaven.

7. *the Eliah of the Messiah*: cf. Malachi iv. 5: 'Behold, I will send you Elijah the prophet before the coming of the great and dreadful day of the Lord'; also Matt. xvii. 10: 'Why then say the scribes that Elias must first come?'; Matt. xvi. 14: 'Some say that thou [Jesus] art . . . Elias.'

15. *that Moses by a secret Cabala . . .*: *cabala* or *cabbala* (Hebrew *qabbalah*, 'reception', 'tradition') is the secret traditional interpretation of the Hebrew scriptures in a mystical sense. It is said by the Jews to have been given orally by Moses.

21. *Pollicy*: political wisdom.

22. *seene in*: versed in, a phrase very common in the sixteenth and seventeenth centuries.

24. *affected*: aimed at, desired, like Latin *affectare*.

Page **32.** 19. *the Widow of Sarepta*: *Sarepta* is the Greek form of Zarephath. See 1 Kings xvii. 18.

26. *intermarry*: now only used in legal language in this reciprocal sense.

28. *Marriage without consent of Parents*: by ancient Roman law a marriage was invalid without the consent of the *paterfamilias*.

29. *they mulct it in the Inheritours*: the injustice of this law is more apparent to the modern mind than it was in Bacon's day.

33. *Huke*: a kind of cape or cloak with a hood, worn in the Middle Ages and later. The word, which is derived from Old Fr. *huque*, *heuque*, was often confused with *haik*, a somewhat similar

Arabian garment. The Latin version has '*indutus tunica picta et inaurata*'.

Page **33**. 7. *of a good Standing*: with a good place to stand in.

11. *had an Aspect as if he pittied Men*: the idea is prominent in Bacon's teaching that the scientific investigator should be a servant of humanity. It is his mission to deliver mankind from the ignorance and false traditions which hold it in thraldom. In his *Redargutio Philosophiarum* (1609) Bacon had described the ideal philosopher in similar terms: '*oris compositio erat tanquam miserantis*.'

15. *Sindon*: see note to **15**. 3.

19. *Spanish Montera*: a round cap, with a flap which could be drawn down over the ears. It was worn by hunters in Spain, and the word is derived from Spanish *montero*, a mountaineer, hunter.

20. *decently*: becomingly.

24. *With two Horses at either end . . . and two Footmen on each side*: the Latin version ('*binis equis . . . cathedram ad utrunq; finem supportantibus, una cum duobus cursoribus ad utrumq; latus cathedræ*') shows that there were four horses and four footmen, and the construction is not similar to that of p. 19, 'they both made two . . . Expeditions', or of p. 28, 'on either side of him two young Lads'.

30. *Emerauds of the Peru Colour*: *emeraude*, from Old French, was the original English form, the modern spelling being probably affected by the Spanish *esmeralda*. The conquerors of Peru found immense quantities of emeralds in the possession of the Incas, obtained chiefly from the Esmeralda river in what is now Ecuador, and from the desert of Atacama in Chile and Bolivia. The so-called Oriental and Brazilian emeralds, which are not true emeralds at all, differ in colour from the genuine 'Peruvian' stones.

31. *Radiant*: not merely resplendent, but surrounded with conventional rays, a quasi-heraldic use.

32. *a small Cherub*: cf. p. 4. This symbol is perhaps connected with the alleged Hebrew affinities of the nation.

33. *Cloath of Gold tissued vpon Blew*: a blue fabric, with gold threads interwoven, or perhaps embroidered on it.

Page **34**. 2. *Stockins*: the dropping of the *g* in *-ing*, in words other than nouns of action or participles, is very common in the sixteenth and seventeenth centuries.

8. *a Crosier . . . a Pastorall Staffe*: properly these terms mean the same thing, viz. the staff in the form of a shepherd's crook, borne by a bishop as a symbol of his pastoral authority. Bacon, however, has followed the common error of confusing the crosier with the cross carried on a staff before an archbishop. 'Crosier' is rendered *crucem* in the Latin version. The word *crosier* or *crozier*, from Old French *crocier*, meant originally

'bearer of a crook' (Old Fr. *croc*). The staff was called a *crosier's staff*, which in the sixteenth century was shortened to *crosier*. It was confused with Old French *croisier*, 'cross-bearer', hence the above-mentioned mistake.

10. *Balme-wood*: balsam-wood. The name *balsam* was applied to various trees which exude aromatic resins.

14. *Companies*: trade gilds, as in the city of London.

21. *stand in better Battell-Array, then the People stood*: cf. **12**. 7.

34. *because he meaneth to giue . . .*: the 'blessing' appears to be the long account which follows, 'the greatest jewel' he has.

PAGE **35**. 3. *hanged*: adorned with tapestry.

4. *Degrees to the State*: steps to the chair of state. Cf. note to **27**. 11. Dr. E. Abbott points out (*Francis Bacon*, p. 422) that the philosopher in Bacon's *Redargutio Philosophiarum* similarly shows his humility by sitting on a level with his audience ('*consedit absque suggesto aut cathedra, sed ex aequo cum caeteris*'). Cf. note to **33**. 11. He remarks that this is 'apparently an emblem of the deprecation of authority in Science, where all should stand on the uniform level of reason'. Bacon claimed for his inductive method that it would put all intellects nearly on a level if they followed the rules he laid down. See Introduction, p. xvii.

16. *kissed the Hemme of his Tippett*: the Governor of the Strangers' House had refused this token of respect (p. 25).

31. *The End of our Foundation*: see Introduction, p. xv.

PAGE **36**. 2. *Caues*: this passage shows that although Bacon advocated an impossibly exhaustive method of induction, he was himself prone to draw hasty conclusions from insufficient data. The science of geology had not yet emerged from crude speculation. These subterranean operations aim at imitating the natural processes by which minerals are formed in the earth, and apparently Bacon thinks the chief conditions necessary are the exclusion of (*a*) the atmosphere, (*b*) the radiation of heat and light, possibly also of more subtle influences from the sun and sky. Of the two principal factors actually present in the formation of mineral veins, precious stones, &c., viz. enormous heat and pressure, he seems to have no conception. For he supposes 'indurations' to take place in caves without any pressure of the overlying rocks (see the quotation in the note to **36**. 11); and although he is aware of 'places under the earth, which by nature . . . yield heat' (p. 41), he follows the Italian philosopher Telesio and some of the ancients in regarding the earth as *primum frigidum* (*Sylva Sylvarum*, § 69), i.e. the ultimate source of cold. Cf. *S. S.*, § 68, 'For cold we must stay till it cometh, or seek it in deep caves or high mountains'.

3. *600. Fathome*: this singular of measure is now much restricted.

digged: the Mid. Eng. verb *diggen* (properly 'to make a ditch') was weak. The A. V. always has *digged*. *Dug* came into use later in the seventeenth century.

7. *the Depth of a Hill* . . . : he means, provided that the vertical distance from the surface of the earth to the cave is the same, it makes no difference to the physical effects whether the cave is at the bottom of a shaft in a plain, or at the end of a tunnel under a hill.

11. *Coagulations*, *Indurations*: cases or kinds of coagulation, and of hardening or solidification. This use of abstract nouns in the plural, rare in modern English, is common in Bacon.

It is not clear whether he distinguished precisely between these two terms, though perhaps 'induration' here denotes the turning of soft into harder solids, as where he applies the word to the formation of wood, bone, and horn by the assimilation of nourishment (*Sylva Sylvarum*, § 90). Discussing 'induration or lapidification' in *S. S.*, § 82, Bacon mentions 'minerals, which come (no doubt) at first of juices concrete, which afterwards indurate: and so of porcelain, which is an artificial cement, buried in the earth a long time . . . also the exudations of rock-diamonds and crystal, which harden with time'. In § 77 he says that in Lydia some workmen were shut up in caves and perished. 'Long time after the dead bones were found; and some vessels which they had carried with them; and the vessels full of water; and that water thicker, and more towards ice, than common water: which is a notable instance of condensation and induration by burial under earth (in caves) for long time.' Spedding notes that Aristotle (*De Mirab.* 52), from whom the story is derived, only says that the vessels and bones were petrified. This illustrates, not only Bacon's ideas on the formation of minerals, but his imperfect conception of scientific evidence.

Bacon is not altogether wrong in regarding precious stones as 'coagulations'. Real though minute diamonds were formed by the French chemist Moissan about 1890 by liquefying carbon dissolved in molten iron under enormous pressure, and suddenly cooling it.

13. *Naturall Mines*: mineral veins.

17. *Curing of some Diseases* . . . *Prolongation of Life*: this idea not only 'seems strange', but is quite baseless.

19. *accommodated of*: provided with.

20. *By whom also we learne many things*: they observe the processes just mentioned.

22. *Burialls in seuerall Earths*: such experiments are discussed in *Sylva Sylvarum*, §§ 376–80.

seuerall: various.

23. *as the Chineses doe their Porcellane*: for 'Chineses' see note to **23.** 10. Chinese porcelain, which was known in England as early as 1506, excited great wonder, as its composition was

unknown. Fabulous stories were told of its origin. Thus Panciroli, an Italian author, asserted that it was a mixture of plaster, eggs, and the scales of lobsters, buried for eighty years. Bacon repeatedly alludes to the supposed method of making it, e. g. in the passage quoted above, in the note to **36.** 11. Even Dr. Johnson adopted the derivation of the word from '*pour cent années*', because it was supposed to be buried for a century. Porcelain is really made from fine white clay and powdered felspar, and it does not appear that the Chinese have ever been in the habit of burying it.

25. *Composts*: prepared manures. The use of artificial manures, which greatly increase the fertility of the soil, has fulfilled this prediction. Bacon treats of manures and composts in *Sylva Sylvarum*, §§ 401–4, 595–600.

27. *High Towers*: useful for meteorological observations, e. g. the Eiffel Tower, which is nearly a quarter of a mile high. They do not provide a sufficiently steady platform for astronomical observatories, which are often placed on high mountains, e. g. at Arequipa in Peru, 8,000 ft. high. The chief advantage of such positions is the clearness of the air.

30. *three Miles*: about the height of the meteorological observatory on Mont Blanc.

34. *Insolation*: exposure to the sun.

35. *Conseruation*: the air at great heights is nearly free from the bacteria which cause putrefaction.

Meteors: in the original sense of the word, including all phenomena of the air; Greek μετέωρα. Cf. *meteorology*.

PAGE **37.** 1. *Fiery Meteors*: meteors were divided into aerial, aqueous, luminous, and igneous or fiery. The last class included shooting stars and lightning.

9. *things buried in Water*: it is commonly supposed that the lustre of faded pearls may be restored by keeping them in the sea for a few months.

15. *Streames and Cataracts*: Bacon here foresees the utilization of the energy liberated by falling water. In his own day little advance had been made beyond the primitive water-mill. Water-motors of various kinds have been developed during the nineteenth century, especially the turbine, which is now extensively applied to waterfalls and mountain torrents for the generation of electric power.

16. *Multiplying and Enforcing of Windes*: *Enforcing* means intensifying. The windmill probably suggested to Bacon the possibility of driving machinery by artificially induced air-currents, a method which has not been found practicable. He has no suspicion of the enormous source of energy since discovered in the expansion of gases, notably steam and petrol gas.

17. *to set . . . on going*: to set in motion.

21. *tincted vpon*: imbued or impregnated with, containing

a tincture of. This is the first recorded use of the obsolete verb *tinct*, properly to tinge, dye, or tint. Medicated baths are well known.

Vitrioll: some springs contain a small percentage of free sulphuric acid or vitriol. They are said to be beneficial for skin diseases, &c.

Steele: such springs are known as chalybeates.

Brasse: strictly speaking, natural springs, or waters which imitate them, cannot contain this metal, as it is an artificial composite product. But by 'brass' Bacon perhaps means copper, as in Deuteronomy viii. 9 (A. V.): 'Out of whose hills thou mayest dig brass', also Moryson's *Itinerary* (1617), I, II. iv. 177: 'Mines of Iron and Brass' (*N. E. D.*) In *Advancement of Learning*, II. x. 9, where Bacon recommends 'the imitation by art of natural baths and medicinable fountains', he says that some of these 'receive tincture' from 'sulphur, vitriol, steel, or the like'.

23. *Wells . . . wher the Waters take the Vertue quicker . . .*: *Virtue* here means 'potency' or 'medicinal efficacy'. The idea is quite fanciful that infusions or solutions can be made better in wells than in vessels. The passage, like others in this work, e. g. that which mentions the preparation of minerals in deep caves, illustrates Bacon's confidence in a slavish copying of Nature's methods. Generally speaking, prolonged investigation of the causes of phenomena is necessary before their essential conditions can be distinguished from accidental accompaniments.

26. *Water of Paradise*: though less miraculous in its effects, this recalls the imaginary 'elixir of life', which was long sought by alchemists. Bacon devoted much attention to the problem of prolonging life, especially in his *Historia Vitae et Mortis*, and *De Augmentis*, iv. Cf. the present work, **36.** 17, **40.**

27. *Soueraigne*: highly efficacious, properly supreme.

30. *Meteors*: see note to **36.** 35.

31. *Bodies*: solids. Desert sand and volcanic dust sometimes fall at immense distances from the place of origin.

32. *Generations of Bodies in Aire*: a widespread belief in Bacon's time. The showers of very small frogs which are said to have been occasionally seen, may have been due to the action of waterspouts, which sometimes empty ponds and drop the water with its contents at a distance. More commonly the alleged phenomenon is a mistaken inference from the appearance of vast numbers of young frogs on the ground after a shower. The sudden appearance of swarms of midges has also been hastily assumed to be a case of 'generation in air'.

PAGE **38.** 1. *wee qualifie the Aire*: modern instances are the bronchitis kettle, the inhalation of oxygen, ether, &c.

6. *Arefaction*: drying up, withering.

7. *Confirming*: strengthening.

15. *Conclusions*: experiments. Obs., except in the phrase 'to try conclusions with'. Cf. Walton, *Life of Wotton*: 'Some part of most days was usually spent in Philosophical Conclusions.'

Grafting: see *Sylva Sylvarum*, §§ 452–4.

Inoculating: budding; Latin *inoculare*, literally 'to put an eye in'.

16. *which produceth*: singular, because *which* = 'which procedure'.

19. *earlier, or later*: acceleration of germination, see *Sylva Sylvarum*, §§ 401–12; retardation, §§ 413–21.

21. *greater . . . then their Nature*: Bacon treats of the 'melioration of fruits, trees, and plants' in *Sylva Sylvarum*, §§ 422–79.

22. *greater, and sweeter, and of differing Tast . . . Figure*. *S. S.*, §§ 499–502. An immense advance has been made in these respects since Bacon's day, chiefly through the propagation of carefully selected varieties and 'sports', as well as through hybridization.

In *S. S.*, § 502, Bacon describes a method of making fruits grow into any desired shapes, as of men, beasts, or birds.

27. *without Seedes*: another instance of the old and persistent delusion of spontaneous generation. Bacon describes experiments of this kind in *Sylva Sylvarum*, §§ 563–73.

28. *New Plants*: it has hitherto proved impossible to produce new species, although varieties and hybrids are grown, the parent stocks of which can only be recognized by an expert.

29. *to make one Tree or Plant turne into another*: cf. *Sylva Sylvarum*, §§ 521–31. The following passage (§ 525) illustrates Bacon's ideas on the subject: 'This work of the transmutation of plants one with another is *inter magnalia naturae*. . . . In living creatures that come of putrefaction there is much transmutation of one into another; as caterpillars turn into flies, &c. And it should seem probable that whatsoever creature, having life, is generated without seed, that creature will change out of one species into another. For it is the seed, and the nature of it, which locketh and boundeth in the creature, that it doeth not expatiate.' If then, Bacon would argue, we can discover the 'form' of germination by seed, and eliminate it, there will be nothing to prevent a plant from changing its species.

33. *take light, what may be wrought vpon*: gain enlightenment with regard to the possible treatment of. The vivisection of animals was rarely practised in and before Bacon's time. He pleads for its use in *Advancement of Learning*, II. x. 5.

35. *Continuing Life . . .*: large portions of the brain, or of the intestines, one of the kidneys, or even in rare cases the whole stomach, may be successfully removed.

PAGE **39**. 4. *By Art . . .*: cf. *Sylva Sylvarum*, § 354. Most of the changes enumerated in this and the two following sentences have been effected by selective breeding in the case of domestic animals, e. g. in the various kinds of toy dogs.

6. *Kinde*: nature, see note to **10**. 25.

12. *not Barren, as the generall Opinion is*: as a rule the more remote the relation between the parent stocks of a hybrid, the more probably will the offspring be sterile.

13. *Serpents*: the term formerly included most vermiform animals, whether vertebrate or not.

Putrefaction: it was generally believed in Bacon's day and long after, that the maggots, worms, &c., formed in putrefying matter were spontaneously generated by means of the accompanying heat and moisture. Cf. **38**. 28, 29, and notes.

15. *Perfect Creatures*: animals capable of performing all the functions of life, such as generation. The lower forms supposed to be produced from slime, &c., were considered imperfect.

22. *Breed*: breeding, an obsolete use.

31. *Manna*: the manna of commerce consists of flakes of the coagulated juice which exudes from the trunk of a species of ash grown in Italy. It is of a sweet taste, soluble in water, and used medicinally. The name is also given to similar substances obtained from various trees. Some are used in the East in confectionary. Bacon considered manna to be a kind of dew (*Sylva Sylvarum*, § 781).

32. *decocted*: boiled down.

34. *Last*: duration; a nearly obsolete word.

PAGE **40**. 3. *White-Meates*: the term is generally applied to poultry, veal, rabbits, and pork.

Wherof some of the Drinkes: a phrase worded ungrammatically, in order to avoid ambiguity. Cf. **4**. 17, 'wherof One of them'.

4. *Meat and Drinke both*: the same idea is found in *Sylva Sylvarum*, i. 45–7. It has been thought that Bacon may have had chocolate in his mind. What appears to have been the first account of it in English occurs in the translation (1604) of Joseph de Acosta's *History of the Indies*, pp. 270–2.

7. *Thin Parts*: Bacon seems to have some vague idea of the molecular structure of liquids.

8. *without all Biting*: *all* for any, as below, 'without all Corrupting', p. 44, 'without all Affectation'.

9. *Fretting*: corrosion.

11. *and yet taste Milde*: although from their effects one might have expected them to be acid. These drinks benefit the health by percolating through the tissues. The idea is quite fanciful.

13. *in that fashion, as*: in such fashion that.

15. *Breads . . . of Flesh*: like the pemmican of North American Indians.

21. *mortified*: made tender by hanging or keeping. Cf. Bacon's *Sylva Sylvarum*, § 891: 'Try it also with Capon . . . laid abroad, to see whether it will mortify and become tender sooner.'

23. *Chylus*: now called *chyle*, from Greek *χυλός* (Galen), the white juice produced in the intestine by the digestion of food, and absorbed by the lacteals.

25. *enable them to Fast*: Bacon had probably read in Acosta's *History of the Indies*, pp. 272–3, of the use of coca by the natives of Peru. The leaves of this plant when chewed enable a person to fast three days without feeling hunger, as the drug anaesthetizes the nerves of the stomach. It also temporarily increases the capacity for muscular effort, like the imaginary foods mentioned below (l. 28). Its habitual use is injurious.

30. *Dispensatories*: dispensaries. Obs., except in the sense 'pharmacopoeia'.

33. *Simples*: natural substances used in medicine without mixture or elaborate preparation.

PAGE **41**. 6. *incorporate*: combine into new substances.

14. *of the Things before recited, many of them*: for this redundant construction cf. **4**. 17, 'wherof One of them'.

15. *But yet, if they did flow* . . .: i.e. we preserve samples of objects that have been invented, even when they are not manufactured for use. Bacon suggests a museum of applied sciences and arts.

19. *Diuersitie of Heates*: Bacon seems to be unaware of the fact that heat is the same, however produced; it varies in degree, but not in quality. Cf. his investigation of the 'form' of heat in the second book of the *Novum Organum*.

20. *Blowne*: by bellows or blow-pipe.

22. *Heauenly Bodies Heates*: the radiation of heat from the fixed stars is imperceptible. That from the moon and some of the planets has been detected, but its effect upon the earth is negligible. Elsewhere Bacon asserts that the moon's rays give no heat.

23. *passe diuerse Inequalities, and . . . Orbs, Progresses, and Returnes*: undergo alterations in their intensity, and go through cycles of variation, as the sun's heat does in the course of the year. The Latin version has: '*calores . . . qui pertranseunt inaequalitates multiplices et veluti orbes, progressus et periodos.*'

25. *Heates of Dungs . . . Herbs layd vp moist*: in all these cases, the heat is generated by the chemical changes accompanying the activity of living organisms, whether bacteria or larger forms.

28. *Lime vnquenched*: lime only produces heat while it is being 'quenched' or slaked. Lime and water combine chemically to form calcium hydrate.

30. *Insolations*: see notes to **36**. 11, 34.

34. *Perspectiue-Houses*: buildings for the use of optical instruments. 'Perspective (glass)' was an old name for a telescope. Latin *perspicere*, 'to see through'.

PAGE **42**. 1. *And out of Things vncoloured* . . .: this sentence seems to mean that a colourless transparent object, such as a piece of glass, can be made by optical means to assume any single colour. No such discovery has been made, nor does it seem to be possible.

2. *represent*: present, produce.

4. *Multiplications of Light*: strictly speaking, light, being a form of energy, cannot be multiplied. It can be concentrated by mirrors or lenses, and increased by the transformation of heat into light, as in the incandescent gas burner. It is not clear what kind of instrument Bacon imagines here, or whether he is speaking of two different instruments, viz. (*a*) a kind of search-light, and (*b*) an instrument which focuses light on small objects.

7. *Delusions and Deceits*: illusions.

11. *Producing of Light, originally*: originating light.

12. *meanes of Seeing Obiects a-farr off*: the telescope was invented in Holland about 1608, and was in use in a primitive form in England and elsewhere within the next few years.

13. *represent Things Neare as A-farr off*: it is not easy to understand the use of this invention.

17. *Meanes, to see Small and Minute Bodies ...*: the development of the microscope from the simple magnifying glass, which had been known from antiquity, was beginning to attract attention when Bacon wrote.

21. *Obseruations in Vrine & Bloud*: the microscopic examination of these fluids, especially for the detection of bacteria, plays an important part in medical diagnosis.

29. *Mettals Vitrificated*: the modern form is 'vitrified'. Vitrification, or turning into a glassy substance, implies the presence of silicon. Many beautiful minerals are silicates containing various metals.

31. *Fossiles*: not necessarily organic remains, but any substances dug out of the earth.

Imperfect Mineralls: apparently minerals in an arrested or incomplete state of development. Bacon supposed that metals, precious stones, and other 'perfect minerals' were gradually formed out of other substances in the earth.

32. *Vertue*: efficacy, power.

PAGE **43.** 1. *Harmonies ... of Quarter-Sounds, and lesser Slides*: cf. *Sylva Sylvarum*, § 110: 'We have no music of quarter-notes; and it may be they are not capable of harmony. . . . Nevertheless we have some slides or relishes of the voice or strings, as it were continued without notes from one tone to another, rising or falling; which are delightful.' Spedding and Ellis's edition of Bacon, ii, p. 388, has the note: 'The diesis or quarter-note does not enter into our scales, but it did into the enharmonic scale of the Greeks.' 'Lesser Slides of Sounds' are glides such as can be produced by the violin in passing from one note to another. The actual divisions of the octave, based on mathematical proportion, are those to which the European ear is accustomed. The ear might be trained to appreciate shorter intervals. There was a piano in the Exhibition of 1851 with keys for the quarter-tones, and an instrument has more recently been constructed for psychological experiments capable of producing a very great number of notes within the octave.

4. *Rings*: chimes.

5. *Wee represent Small Sounds as Great and Deepe*: this anticipates the microphone. The converse does not appear to have been invented. Cf. the converse of the telescope (p. 42, 'represent Things Neare as A-farr off').

7. *Wee make diuerse Tremblings . . . Entire*: this seems to refer to the 'tremolo', i. e. the rapid repetition of a short note instead of one long note. It is produced in modern organs by a device called the 'tremolant' or 'tremulant'.

8. *Wee represent and imitate all Articulate Sounds . . .*: an anticipation of the phonograph. Cf. *Sylva Sylvarum*, §§ 236-41.

Letters: in the unusual sense of sounds symbolized by letters. Cf. *Advancement of Learning*, II. vii. 5: 'To inquire the form of those sounds or voices which make simple letters is easily comprehensible.'

11. *Helps*: following Giambattista della Porta, a Neapolitan scientific writer to whom he is much indebted, Bacon proposes the making of ear-trumpets in *Sylva Sylvarum*, § 285, and adds, 'I have heard there is in Spain an instrument in use to be set to the ear, that helpeth somewhat those that are thick of hearing'.

14. *some that giue back the Voice Lowder*: the echo in the whispering gallery in the dome of St. Paul's Cathedral is a good example.

18. *Trunks*: tubes.

in strange Lines: this does not refer to anything resembling a telephone, but means that the tubes will convey sound not only in a straight line, but in any direction required. Cf. the Latin version, '*in lineis tortuosis*', also *Sylva Sylvarum*, Cent. III, beginning: 'Experiments in consort touching the motions of sounds, in what lines they are.'

21. *Practises of Tast*: experiments in taste.

22. *Wee Imitate Smells*: the production of synthetic perfumes, essential oils obtained from coal-tar and other substances, identical with or closely simulating the natural odours of flowers and fruits, is one of the triumphs of modern chemistry. Some of these essential oils are also used for flavouring food.

28. *Sallets*: salads.

34. *Multiply them . . . with Small Force, by Wheeles*: although theoretically velocity may be increased indefinitely by wheels connected by cogs, endless bands, &c., yet the force required increases with the velocity, apart from the difficulties due to friction. It is hardly conceivable that the wheel could be used for increasing the velocity of projectiles.

PAGE **44**. 3. *Basilisks*: an obsolete name for a kind of large cannon, properly a fabulous serpent which was said to slay with its glance or breath. Other kinds of ordnance were called *serpent* and *culverin* (Lat. *colubrinus*).

5. *New Mixtures and Compositions of Gun-Powder*: before the middle of the nineteenth century substitutes for ordinary gunpowder were hardly used either for propelling missiles or for blasting. The progress of chemistry during the last half-century has led to the invention of a great variety of explosives.

6. *Wilde-Fires*: inflammable liquids used in antiquity and the Middle Ages for setting on fire an enemy's ships, &c. The most famous kind, known as Greek fire from its use by the Byzantines, probably contained sulphur, naphtha, and quicklime, ignited spontaneously in contact with water, and was almost unquenchable. The Latin version renders 'Wilde-Fires' by '*ignes Graecos*'. Cf. *Sylva Sylvarum*, § 783.

8. *Wee imitate . . . Flights of Birds*: cf. *Sylva Sylvarum*, § 886, 'Experiment solitary touching flying in the air', where Bacon mentions that the ancient Leucadians tied live birds and feathers to criminals before throwing them from a precipice, to give them a chance of surviving, and adds: 'The further extension of this experiment for flying may be thought upon.' It is remarkable that although many attempts have been made to produce a flying machine which will imitate the motion of a bird's wings, the problem of mechanical flight has only been solved by adopting a different principle, viz. the combination of fixed planes with screw propellers. Cf. the note to **37**. 23. Bacon evidently regarded the problem as exceptionally difficult, for even the inventors of Solomon's House have not entirely solved it ('Wee haue some Degrees of Flying').

9. *Shipps and Boates for Going vnder Water*: John Napier of Merchiston, the famous mathematician, announced in 1596, when a Spanish invasion was feared, various military inventions, including 'devices of sailing under the water', which, he says, he 'hopes to perform'. The modern submarine dates from about 1887.

10. *Brooking of Seas*: i. e. resisting the force of the waves.

12. *Motions of Returne*: machines depending on any regularly recurring or cyclical movement. The Latin version has '*motus aeris et aquarum, in orbem et vices reuertentes*'.

13. *Perpetuall Motions*: the vain search for perpetual motion has for ages attracted many minds, and is still pursued by persons ignorant of the fact, which was unknown in Bacon's time, that the energy of every moving body is gradually dissipated through friction, and cannot be replaced except from an external source.

14. *Images*: i. e. automata. Such figures are said to have been made by various eminent men of science, by Archytas and Hero in ancient times, by Albertus Magnus and Roger Bacon

in the Middle Ages, and even by Descartes. They are now regarded as merely ingenious toys.

16. *Motions, strange for Equality, Finenesse, and Subtilty*: i.e. probably, remarkable for their evenness or regularity, for their delicacy, and for their complexity. The Latin version has '*motus, aequalitate insignes et subtilitate*'.

22. *Feates of Iugling* . . .: these conjuring tricks seem scarcely worthy of so dignified an institution as Solomon's House. Sir Sidney Lee, in his *Great Englishmen of the Sixteenth Century*, VI. xiii, infers that these illusions are 'explained to serious students who go out into the world, and by their instruction prevent the simple-minded from being deceived by quacks and impostors'. Legerdemain has a practical value in teaching one to distrust the evidence of the senses.

23. *And their Fallaces*: i.e. we explain the nature of the illusions.

26. *in a World of Particulars*: in a vast number of particular cases.

29. *wee doe hate all Impostures*: cf. *Sylva Sylvarum*, Cent. VI, beginning, 'Our experiments we take care to be (as we have often said) either *experimenta fructifera* or *lucifera*; either of use or of discovery: for we hate impostures, and despise curiosities'.

Insomuch as: to such a degree that.

30. *forbidden it . . . that they doe not* . . .: for the redundant negative cf. note to **5**. 21.

PAGE **45**. 1. *seuerall Employments and Offices*: the formal and impracticable scheme of division of labour sketched in the following passage is discussed in the Introduction, p. xv f., where it is shown that the various classes of investigators correspond to the stages in the discovery of scientific truth, according to the system described in the *Novum Organum*. Cf. also p. xxxiii f.

2. *Twelue that Sayle into Forraine Countries* . . .: although he was far from keeping abreast of the scientific movement of the day, either at home or abroad, Bacon was keenly aware of the necessity of a systematic collection of the assured results of research. He repeatedly quotes Daniel xii. 4: 'Many shall run to and fro, and knowledge shall be increased,' a text which forms the motto of the *Novum Organum*. The suggestion to appoint 'Merchants of Light' was adopted by Cowley in his *Proposition for the Advancement of Experimental Philosophy* (*Essays*, &c., ed. Gough, p. 34 and note). Four 'professors itinerant' are to reside three years at least in the four quarters of the world, and send constant reports of the scientific progress of those regions. Similar provision was made on the founding of the Royal Society. Although facilities for communication have lessened the need, which was urgent in Bacon's day, yet many universities, especially in America and Germany, often give prolonged leave of absence to their professors for research

in foreign countries. Cf. also the 'corresponding members' of scientific societies.

10. *Liberall Sciences*: more commonly 'liberal arts', i.e. those fit for a free man, and not, like mechanical arts, cultivated for the sake of profit.

11. *Practises which are not Brought into Arts*: apparently such processes as are carried on in a rude, unmethodical manner.

12. *Mystery-Men*: the word *mystery*, in the sense of an art or handicraft, is the Mid. Eng. *mistere*, from Old French *mestier* (Mod. French *métier*), from Latin *ministerium*, a service, employment, misspelt through confusion with *mystery* from Latin *mysterium*. The Latin version has '*Venatores*'.

The functions of 'Merchants of Light', 'Depredatours', and 'Mystery-Men' are in part fulfilled by the editors of scientific year-books and other periodicals.

15. *Drawe . . . into Titles*: arrange under heads, classify.

18. *Compilers*: in the Latin version '*Divisores*'.

19. *bend themselues*: apply themselves.

22. *as well for Workes . . .*: i.e. both for practical ends and for theorizing.

23. *Naturall Diuinations*: means of discovering the secrets of Nature, forecasting physical changes, &c., without preternatural aid. Cf. **47**. 13.

27. *Consults*: consultations, Latin *consulta*.

30. *Light*: see note to **25**. 10.

35. *Inoculatours*: literally, persons who bud trees. Cf. **38**. 15.

PAGE **46**. 1. *Three that raise . . . Aphorismes*: the Latin version adds that they only do this after consultation with all their colleagues: '*quod faciunt nonnisi consultatione et colloquio prius habitis cum sociis universis.*'

3. *Interpreters of Nature*: the *Novum Organum*, the secondary title of which is 'Indicia vera de interpretatione naturae', opens with the words, 'Homo, naturae minister et interpres'.

10. *an Oath of Secrecy*: in his *Sylva Sylvarum* Bacon mentions two alleged inventions which he considers would be dangerous if they were widely known: a white gunpowder that explodes noiselessly (§ 120), and a method of rendering the flesh of beasts, fowl, or fish poisonous, by feeding them with certain substances (§ 499).

18. *Statua's*: *statua* is the Latin form, used repeatedly by Bacon in the *Essays*.

19. *the West-Indies*: originally not only the islands, but the neighbouring continents of North and South America. The name is due to the idea that the discoverers had reached eastern Asia.

20. *the Inuentour of Shipps*: the belief that an inventor could, if our knowledge sufficed, be assigned to every art and invention was general, until it was realized that most products of human

skill are the results of a long process of evolution. Even gunpowder and printing are not exceptions.

Your Monke that was the Inuentour of Ordnance, and of Gunpowder: this may refer either to Roger Bacon or to Berthold Schwarz, both of whom, however, were Franciscan friars, therefore, strictly speaking, not monks. 'Your' may mean 'European' as well as 'English'. Roger Bacon described the composition and explosive character of gunpowder in 1242, and is said, though on no good evidence, to have invented guns, but to have kept the invention secret. It is more probable that the person referred to is Schwarz or Schwartz, of Freiburg im Breisgau, who has long been traditionally regarded as the inventor both of gunpowder and fire-arms. His claim cannot be proved, as it is not known when he lived. Cf. W. Camden, *Remaines concerning Britaine*, third impression, 1623, p. 207: 'One writeth I know not upon whose credit, that Roger Bacon (commonly called Frier Bacon) knew how to make an engine, which with Saltpeter and Brimstone, should prove notable for batterie. . . . The best approved Authors agree that they [guns] were invented in Germanie, by Berthold Swarte a Monke skilfull in Gebers [algebra], Cookery or Alchimy.' Gunpowder, as an explosive, seems to have been evolved from incendiary compositions known to the Chinese, Arabs, and Greeks. Firearms are known to have been in use as early as 1325.

22. *Musicke*: Jubal is called 'the father of all such as handle the harp and organ' in Gen. iv. 21.

Letters: the Greeks ascribed the invention of letters, as of many other things, to the god Hermes. Josephus writes that he has seen an inscription by Seth, the son of Adam. The invention of Egyptian hieroglyphics was fictitiously ascribed by the Greeks to Athothis, successor to Menes, or to Memnon. Most alphabets appear to have been slowly evolved from picture-writing, the symbol representing successively a thing, a name, and a sound. The origins of our alphabet have recently been traced back to the 'Magdalenian epoch', earlier than the Neolithic age. See G. Sergi, *The Mediterranean Race*, 1901, pp. 296–305.

23. *Printing*: the art of printing, like gunpowder and letters, was rather evolved than suddenly invented. The Chinese printed with movable types as early as the eleventh century. The art arose independently in Europe in the fifteenth century. There has been much discussion as to the rival claims of Johann Gutenberg of Mainz, and of Lourens Coster of Haarlem. There is little doubt that the latter deserves the credit of being the first European to print with movable types (*c.* 1440).

24. *Works in Mettall*: according to Gen. iv. 22, Tubal-cain, the brother of Jubal, was 'an instructer of every artificer in brass and iron'.

25. *Glasse*: Hermes was said to have taught the Egyptians

the use of glass. Pliny (*Hist. Nat.* xxxvi. 65) relates that its manufacture was discovered accidentally by some merchants who landed on the Syrian coast and lighted a fire on the shore, placing lumps of natron on the sand to support a cauldron. It is highly probable that glass was first made in the district Pliny mentions, at the foot of Mount Carmel.

26. *Wine*: its invention is attributed in Gen. ix. 20 to Noah. The Greeks considered the god Dionysus its inventor.

27. *Corne and Bread*: the Greeks considered the Eleusinian hero Triptolemus as the inventor of the art of growing wheat. It has been cultivated from prehistoric times in the Mediterranean basin.

Parallels to some of the above traditions are found in most parts of the world. Thus the Chinese attribute music and letters to the mythical emperor Fo-hi, and wine and cereals to his successor Shen-nung.

28. *Sugars*: cane sugar was the only kind known in Bacon's time. He probably uses the plural to include any similar sweet substances, such as manna (cf. **39**. 31). The sugar-cane was used in India from remote antiquity, and became known to the Greeks through Alexander's expedition. Sugar, however, was scarcely ever brought to Europe until the fifteenth century. Before that period its place was supplied by honey.

PAGE **47**. 2. *Touchstone*: basanite, a kind of hard dark silicious schist, like jasper, used for testing gold and silver alloys, by the marks they leave when drawn across it; hence the name. It would be difficult to use it for statues.

13. *Naturall Diuinations*: see note to **45**. 24. For 'Prognostics of pestilential and unwholesome years' cf. *Sylva Sylvarum*, §§ 801–7.

16. *Cometts*: it was a general belief that the appearance of a comet foreboded public disaster. Bacon thinks it has a baleful effect, though due to natural causes. He observes in *Nov. Org.* II. xii. 8 that comets are often followed by droughts. Cf. also Essay lviii, 'Of Vicissitude of Things'.

Temperature: not merely the amount of heat, but of moisture as well; properly 'mixture' or 'composition'.

26. *Duckets*: the ducat, a gold coin of the value of about 9*s*., was in use throughout a great part of Europe at this time. It is said to have been first coined in the duchy (*ducatus*) of Apulia.

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